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The reading achievement of 376 second graders and the performances in oral reading and creative writing of 150 randomly selected subjects taught by three different methods were studied. All three approaches (basal reader, modified linguistic, and linguistic) were effective for reading instruction at the second-grade level. The largest differences in achievement observed were differences in classroom means within treatment groups. An addendum supplementing the original report describes a modified continuation of the study which examined the reading achievement of 376 third-grade children relative to different methods of instruction received in grades 1 and 2. The addendum also describes the characteristics of 106 disabled readers among the third-grade population. These disabled readers could have been identified as potential reading failures at the beginning of first grade on the basis of objective measures. This study confirms the results of the first- and second-grade studies that none of the three approaches is entirely successful in teaching all children to read and that the teacher variable is a most important factor. A bibliography is included. (KJ)

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COMPARISON OF THREE METHODS OF TEACHING READING IN THE SECOND GRADE

Cooperative Research Project No. 3231

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Donald R. Lashinger

Syracuse University
Syracuse, New York
1967

U. S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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CHAPTER I -- PROBLEM AND PURPOSES

During the 1964-65 school year a cooperative research project sponsored by the U. S. Office of Education and executed through the facilities of Syracuse University was carried out. The purpose of this study was to determine the relative effectiveness of three methods of beginning reading instruction on the achievement of first grade pupils. Again under the sponsorship of the U. S. Office of Education, this study was continued with the same children through their second grade year. The continuation of the study was felt to be necessary in order to make an unbiased evaluation of the effectiveness of two of the methods which are designed in such a way that they cannot typically be completed in grade one.

This study of reading instruction at second grade level was part of a larger cooperative effort sponsored by the U. S. Office of Education. Included in this larger effort were 14 studies of reading at this level. Each of these projects was a continuation of a sponsored study of first grade reading. These fourteen studies are coordinated through the Coordinating Center established at the University of Minnesota. At various meetings and conferences the project directors of the fourteen second grade studies agreed on common measures of achievement to be administered, common background data to be collected, and certain common procedures to be followed. This study was continued through the third grade. The description of the second grade study is presented in Chapters I-V. A limited presentation of the study of grade three pupils appears in the addendum.

Problem

The three approaches to beginning reading under evaluation in this study are a typical basal reader approach to instruction, a modified linguistic technique, and a linguistic method. Bleismer and Yarborough, in their comparative study of first grade reading have classified the modified linguistic technique used here as a synthetic phonic approach.[1] The research available comparing the relative effectiveness of basal readers and a variety of phonic methods fails to provide unequivocal information as to the superiority of either approach. Very little controlled research exists which evaluates any purely linguistic method because of the very recent availability of teaching materials of this type.

Results of a year's controlled experimental study of the effectiveness of these three approaches at first grade level allowed certain conclusions to be drawn. Most children learned to read at a satisfactory level regardless of method of instruction. A few children did not progress satisfactorily in each of the three treatment groups. When mean achievement scores for the three experimental groups were compared no significant differences were observed. Significant differences were noted in three subtest means. Achievement in both accuracy and rate on the Gilmore Oral Reading Test favored the basal approach over the other two. The mean score of the Consonant Blends, Digraphs subtest of the Allyn and Bacon First Reader Test also favored the basal group. Though the differences in total achievement means were non-significant, the trends at the conclusion of grade one indicated that a possible superiority for the basal reader approach might be developing.

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[1] Emery P. Bleismer and Betty H. Yarborough, "A Comparison of Ten Different Beginning Reading Programs in First Grade," Phi Delta Kappan, XLVI (June, 1965), 500-504.

The modified linguistic (phonic) and the linguistic approaches used are designed to be completed in approximately two years. The possibility that continued work in these materials through second grade might result in important changes in relative achievement of the three experimental groups prompted continuation of the study through a second year. The possibility of a developing trend toward superior effectiveness of the basal approach was an additional reason for continuing the observations begun in the first year.

Purposes

1. To determine if any relative differences in achievement are apparent at the conclusion of grade two that were immeasurable at the conclusion of grade one which can be attributed to method of instruction.
2. To determine if any significant differences occur among mean scores on word study skills, word recognition, spelling, and comprehension tests of the three experimental groups which can be attributed to method of instruction.

3. To determine which method, if any, appears to be most successful as an instructional tool for either boys or girls of high, average, or below average ability under the conditions of this experiment.
4. To determine any significant differences between test scores resulting from method of instruction when pre-test scores of intelligence are held constant.
5. To determine which method, if any, produces significantly superior results when achievement levels of children as judged by pre-test results are held constant.

Definitions

1. Basal reader program -- the basic instructional material used by children in seven classrooms. The series chosen for use in this study was the Ginn Basic Reading Series by David H. Russell and others.[2] This was the series used in the first grade study.
2. Modified linguistic materials -- the basis for instruction in seven classrooms. The particular series chosen was the Structural Reading Series by Catherine Stern and others.[3] This material had been used as basic instructional material with one treatment group in first grade.
3. Linguistic readers -- the materials used for instruction in seven classrooms. The material chosen, as in the first grade study, was the Let's Read series by Leonard Bloomfield

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[2] David H. Russell and others, Ginn Basic Reading Series, (Boston: Ginn and Company, 1964).

[3] Catherine Stern and others, Structural Reading Series (Syracuse, New York: L. W. Singer Company, Inc., 1963).

and Clarence Barnhart.[4]

4. Reading Achievement -- measurement of reading skills as determined by the *Stanford Achievement Test*, Primary Batteries I and II[5] and the *Gilmore Oral Reading Test*.[6]
5. Mental ability -- the mental age as determined by performance on the *Pintner-Cunningham Primary Test*, Form A.[7]
6. Readiness -- that information on children which was derived from the *Metropolitan Readiness Test*,[8] the *Murphy-Durrell Diagnostic Reading Readiness Test*,[9] the *Thurstone Identical Forms Test*,[10] the *Thurstone Pattern Copying Test*,[11] and the Allyn and Bacon *Pre-Reading Test*.[12]
7. Listening-Viewing -- that procedure by which selected children were exposed to listening and viewing experiences through the use of a tape recorder, record player, a jack-box containing eight sets of headphones, a filmstrip projector, a small screen and filmstrips, records and tapes of both the commercially available type and teacher made variety.

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[4] Leonard Bloomfield and Clarence L. Barnhart, *Let's Read* (Bronxville, New York: C. L. Barnhart, Inc., 1963).

[5] Truman L. Kelley and others, *Stanford Achievement Test*, Primary I and II Batteries, (New York: Harcourt, Brace and World, Inc., 1964).

[6] John V. Gilmore, *Gilmore Oral Reading Test* (New York: Harcourt, Brace and World, Inc., 1952).

[7] Rudolph Pintner and others, *Pintner-Cunningham Primary Test*, Form A, (New York: Harcourt, Brace and World, Inc., 1964).

[8] Gertrude Hildreth and others, *Metropolitan Readiness Tests*, (New York: Harcourt, Brace and World, Inc., 1964).

[9] Helen Murphy and Donald Durrell, *Murphy-Durrell Diagnostic Reading Readiness Test*, Revised Edition, (New York: Harcourt, Brace and World, Inc., 1964).

[10] Printed for use in the 27 USOE First Grade Studies.

[11] Printed for use in the 27 USOE First Grade Studies.

[12] William D. Sheldon and others, Reading Achievement Tests, *Pre-Reading Test*, Form I, (Boston: Allyn and Bacon, Inc., 1963).

CHAPTER II -- REVIEW OF RELATED RESEARCH

The role of phonics instruction in beginning reading has been debated for many years. Opinions of experts in reading and peripheral fields are consistent only in their diversity. Reports of controlled research reveal conflicting results. Witty and Sizemore[1] reviewed approximately thirty studies conducted between 1912 and 1954 that were related to the value of phonics at different levels of instruction. Of these thirty, half were inconclusive in their results. Twelve provided evidence supporting the value of phonics. No study reviewed gave clear cut evidence of the role phonics should play in primary reading instruction.

The debate on how, when, and by what methods phonics should be presented was intensified in 1955 by the publication of Why Johnny Can't Read by Rudolph Flesch.[2] In it he attacked American reading instruction on the basis that only a whole-word approach was being used in teaching children to read. He advocated, in its place, the teaching of beginning reading based on only one skill -- phonics. His book also included a series of seventy-two lessons in phonics designed to teach the young child to read.

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[1] Paul A. Witty and Robert A. Sizemore, "Phonics in the Reading Program: A Review and an Evaluation," Elementary English XXXII (October 1955), 355-71.

[2] Rudolph Flesch, Why Johnny Can't Read (New York: Harper and Brothers, 1955).

In response to Flesch's comments and other similar criticisms the Carnegie Corporation of New York sponsored a conference during the fall of 1961. This meeting was held at the request of James B. Conant and was attended by twenty-eight well known educators and writers on reading instruction. The report of this conference was published in the booklet entitled Learning to Read, which included a lengthy statement concerning the place of phonics in the total reading program.[3] This statement was approved by twenty-seven of the conference participants. The one dissenting individual submitted a separate opinion, included in the publication, in which increased emphasis on phonics instruction was urged.

Artley, in an article appearing in Education in 1962 expresses his opinions on the role of phonics in primary reading instruction.[4] He describes one intensive synthetic method of phonics instruction, the Hay-Wingo, Reading With Phonics material. He then describes, erroneously, the Bloomfield-Barnhart Let's Read materials as a second phonics approach. He fails to identify the differences between this linguistic approach and a phonics approach and mistakenly describes its method as one of "drilling the child on the sounds of letters and letter combinations." He then proceeds to describe accurately the integrated phonics approach common to typical basal reading series. His conclusion is, "If . . . one is concerned with word attack as a means to an end, the end being growth toward maturity in all aspects of interpretation, there is need for an entirely different approach and content." Artley by this statement was essentially rejecting phonic and linguistic approaches as methods that could provide for this maturity in all aspects of interpretation. One of the major purposes of the present study was to compare growth in comprehension and interpretation skills between groups of children receiving initial reading instruction in these three contrasting types of materials.

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[3] Learning to Read: A Report of a Conference of Reading Experts (Princeton, New Jersey: Educational Testing Service, 1962).

[4] A. Sterl Artley, "Phonic Skills in Beginning Reading," Education, (May, 1962), 529-32.

In addition to publications of opinion one also finds many studies done within the last twelve years exploring the value of phonics in the beginning reading program. Russell and Fea state that "more has been written on phonics in the past five years than any other aspect of the teaching of reading."[5] The problem of uncontrolled variables makes it difficult to select pertinent studies from this collection.

Sparks and Fay[6] conducted a longitudinal study comparing the effects of a basal reading program and an intensive phonetic approach. They evaluated the achievement of children taught by one of these two approaches at the end of grades one, two, and three and again during grade four. Results at the end of first grade showed that children taught by the phonetic approach were achieving at a higher level in reading vocabulary than the control group. At the end of second grade this experimental group achieved higher scores in reading comprehension than the control group. The initial superiority in word recognition was no longer evident. At the end of grade three and during grade four no significant differences were found between the basic reader and intensive phonetic groups. The authors concluded that the basic reading program introduced enough phonetic training to provide the child with the word attack skills necessary to success in reading at this level.

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[5] David H. Russell and Henry R. Fea, "Research in Teaching Reading," Handbook of Research on Teaching, N. L. Gage, editor (Chicago: Rand McNally and Co., 1963), 875.

[6] Paul E. Sparks and Leo C. Fay, "An Evaluation of Two Methods of Teaching Reading," Elementary School Journal LVII (April, 1957), 386-90.

Another three year study designed to compare the effects of a phonetic program and a "traditional approach" was carried out by Henderson.[7] She reported results at the end of grade three which significantly favored the phonetic group in all criteria. Her results include an examination of the mean scores of four different well known tests which produced a total of fourteen scores. Ten of the mean differences were found to be significant at the .01 level and the remaining four were significant at the .05 level.

It is difficult to determine the exact nature of Henderson's experiment because of the lack of information on the "traditional approach." Materials and methods used in the control classes were not identified nor defined. Furthermore, the comments of the experimental teachers indicated that a great deal of extra effort and enthusiasm prevailed in the experimental classes. No mention was made of the activities or the attitudes exhibited by teachers of the control classes.

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[7] Margaret G. Henderson, Progress Report of Reading Study: 1952-1955 (Champaign, Illinois: Community Unit School District No. 4, no date).

Bear conducted a study which evaluated a synthetic phonics program and an analytic phonics method.[8] Both control and experimental groups followed the same basal reader program. The method of introducing phonics was the experimental variable. The control group was taught the analytic phonics program of the basal reader according to procedures outlined in the manual. The experimental, or synthetic phonics, group experienced phonic instruction from a phonics reader, phonics workbooks, and picture cards for a thirty minute period daily. The total time spent in daily reading and phonics instruction was the same for both groups.

At the end of the first semester of grade one the two approaches were found to be equally effective. By the end of grade one, however, the testing program indicated that children in the low and middle ability groups using the synthetic phonics approach achieved higher scores. Children of high ability achieved equally well in both experimental and control groups.

Bear[9] was able to follow up and evaluate the achievement of the children in this study at the end of grade six. All children had received the same basal reader instruction after grade one. At the end of grade six results of the Gates Reading Survey favored the experimental, or synthetic phonics, group on all subtests. Only the vocabulary subtest showed a significant difference at the .05 level, however. Two tests of spelling indicated superiority at the

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[8] David E. Bear, "Phonics for First Grade: A Comparison of Two Methods," Elementary School Journal, XLIX (April, 1959), 394-402.

[9] David E. Bear, "Two Methods of Teaching Phonics: A Longitudinal Study," Elementary School Journal, LXIV (February, 1964), 273-79.

.01 level for the experimental group. Bear's original group contained 136 children. Of this group only ninety children were available for study at sixth grade level. There is the possibility that the selective effect resulting from children repeating one or more grades could have biased his findings.

Bloomer compared the achievement of two first grade classes at the end of one year of instruction.[10] The control group in this study followed a regular basal reading program for the entire year. The experimental class alternated formal phonic instruction and basal reading instruction. That is, after a reading readiness program from a basal reader, formal phonics lessons were taught for sixteen weeks. This, in turn, was followed by eight weeks of instruction in the basal reader series. The phonics program in the basal reader was not taught to the experimental group. Reported results indicated significantly superior performance in word recognition and sentence reading for the experimental group. Bloomer concludes by stating that formal phonics training prior to the usual basal reader instruction produces the superior results found in this study.

Kelley performed a post-hoc study on the achievement of 100 pairs of second grade pupils equated on the basis of mental age.[11] One member of each pair had received reading instruction from the Scott, Foresman Basal Series. The other group had received intensive phonics instruction alternated with work in basal readers. The Economy Materials had been used for the phonics instruction. Kelley found differences significant beyond the .001 level favoring the phonics group for mean reading achievement.

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[10] Richard H. Bloomer, "An Investigation of an Experimental First Grade Phonics Program," Journal of Educational Research, LIII (January, 1960), 188-193.

[11] Barbara Cline Kelley, "The Economy Method Versus the Scott, Foresman Method in Teaching Second Grade Reading in Murphysboro Public Schools," Journal of Educational Research, Vol. 51, (February, 1958), 465-69.

Duncan has reported a similar study in which his experimental group received phonics instruction supplemented by basal reading instruction in a program comparable to the ones discussed by Bloomer and by Kelley.[12] Results were evaluated by comparing median scores on the Metropolitan Achievement Tests at the end of grades two and three. All differences favored the experimental group. The most significant areas of difference noted by Duncan were in the reading comprehension and language scores, with the major differences occurring in the average and above average groups of children.

A fourth study comparing this same phonic method alternated with a basal approach is reported by Morgan and Light.[13] These investigators report achievement at the end of the third grade. Two classes had used the formal phonic approach prior to the basal reader for three years. Two control classes had used the basal approach as detailed in the manuals for three years. The children were given the *Gates Basic Reading Test*, the *Durrell-Sullivan Spelling Test* and the *California Achievement Test* at the end of grade three. Analysis of variance showed two significant differences on the Gates variables. Results of the Reading Vocabulary and Reading Comprehension were significantly in favor of the children instructed in the basal reading program only. The *California Achievement Test* showed highly significant differences favoring the basal group on Reading Vocabulary, Reading Comprehension, and Total Achievement. Both the *Durrell-Sullivan Spelling Test* and the spelling subtest of the *California Achievement Test* showed non-significant differences between the two groups in spelling skill.

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[12] Roger L. Duncan, "What Is the Best Way to Teach Reading?", School Management, Vol. 8 (December 1964), 46-47.

[13] Morgan and Light, "A Statistical Evaluation of Two Programs of Reading Instruction," Journal of Educational Research, LVII (October, 1963), 99-101.

The authors concluded that a formal phonic approach as used in this study could not be claimed to be superior to a basal approach. Neither could it be claimed to be damaging in any way as the means of both experimental and control groups were well above national norms on the tests used.

Cleland and Miller explored the relation of instruction in phonics to success in beginning reading. They compared reading achievement of equated groups of first graders using a basal reader unsupplemented and the same basal reader supplemented by a concentrated phonetics program. The *Metropolitan Achievement Test* was used to evaluate achievement. Differences in the achievement of the two groups were slight and the authors concluded that neither approach could be demonstrated to be superior. Two subtest scores showed superiority in achievement at the .05 level for boys. Boys in quartile two of intelligence rating who had received the supplementary phonics instruction showed superiority in spelling achievement. The total group of boys in this same instructional group showed higher achievement in the Word Knowledge subtest of the evaluating instrument.[14]

Rudisill has made a comparison of reading and spelling skills of an experimental group of first graders using a "newly developed combination phonic and sight-context-reading approach."[15] She reports progress for her two experimental groups at approximately double the expected rate. Rudisill gives no description of her population except that one group was classified as average in intelligence and the other high average. No control group was used. Rate of progress was assessed by comparisons with national norms for the testing instruments used. No discussion of the comparability of the experimental and the norm group was given.

An investigation conducted by Sweeney explored the relative effectiveness of the Phonovisual phonics method and phonics taught as directed in a basal reader program at second grade level.[16] In addition to the regular reading instruction both experimental and control groups were allowed fifteen minutes of supplementary phonics daily. At the end of grade two the experimental Phonvisual group achieved higher mean scores on tests of word attack skills and spelling constructed by the investigator. No indication is given in Sweeney's discussion of any significance in differences between the mean scores. However, he concludes the Phonovisual approach to be "undoubtedly superior" to the basal approach.

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[14] Donald L. Cleland and Harry B. Miller, "Instruction of Phonics and Success in Beginning Reading," Elementary School Journal, (February, 1965), 278-82.

[15] Mable Rudisill, "Sight, Sound and Meanings in Learning to Read," Elementary English, XXXI (October, 1964), 622-630.

[16] John R. Sweeney, "An Experimental Study of the Phonovisual Method of Teaching Phonics," Ontario Journal of Educational Research, VII (Spring, 1965), 263-72.

McCollum reports results of two studies designed to compare the Carden Reading Program which has a strong emphasis on early phonics instruction, to the typical basal approach.[17] His first experiment compared two first grade and one third grade class using the Carden Method to three similar classes using a basal reader. He found no significant differences in the two groups at third grade level. At first grade level he noted a significant difference in achievement in favor of the basal group.

McCollum's second experiment involved two first grade classes using the Carden Method and two using a basal approach plus a variety of supplementary materials. Using the Stroud-Hieronymous Primary Reading Profiles he noted differences at the .05 level of significance favoring the basal group on all subtests except word recognition. On this test achievement of the two groups was the same.

Tensuan and Davis report an interesting comparison of the methods in teaching beginning reading in a phonemically regular language, Tagalog.[18] They compared results achieved by a phonic method of word recognition and a typical basal method of teaching reading where a child is taught a combination of phonic, structural, context, and whole word methods of word recognition. In this phonemically regular language a wholly phonic method could be expected to demonstrate its maximum utility for the child. The investigators concluded at the end of two year's observation that no superiority could be demonstrated for the phonic approach. Slight, but non-significant superiority favored the combination method.

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[17] John A. McCollum, "An Evaluation of the Carden Reading Program," Elementary English, XXXXI, (October, 1964), 600-612.

[18] Emperatriz S. Tensuan and Frederick B. Davis, "The Phonic Method in Teaching Beginning Reading," New Developments in Programs and Procedures for College-Adult Reading, Ralph C. Staiger and Culbreth Y. Melton editors. Twelfth Yearbook of the National Reading Conference, 1963.

A recent study by Bliesmer and Yarborough compared the effects of ten different beginning reading programs on a population of 596 children in twenty classrooms.[19] Five of the programs represented an analytic approach as found in three basal reader programs and two individualized reading systems. The remaining five programs represented a synthetic phonics method of teaching beginning reading skills. Results of this study show that 92 out of 125 differences among achievement test means were found to be significant in favor of the synthetic phonics method. In only three cases were the differences found to favor the analytic approach. The authors also cite evidence to dispute the claim that a synthetic phonic approach does not give proper emphasis to the building of comprehension skills. In the area of paragraph reading they found that in twenty out of twenty-five instances significant differences were found favoring the synthetic phonics method while only one difference (not significant) was noted in favor of the analytic method.

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[19] Emery P. Bliesmer and Betty H. Yarborough, "A Comparison of Ten Different Beginning Reading Programs in First Grade," Phi Delta Kappan, XLVI (June, 1965), 500-504.

Tanyzer and Alpert studied the effects on the progress of first grade children resulting from instruction in basal materials using a highly analytical phonics approach emphasizing word structure and the phonetic characteristics of words. This method was compared for effectiveness with basal materials utilizing an eclectic approach to word recognition. Under this program the child is trained to use a variety of techniques of word recognition. Their results indicated at the conclusion of grade one that the pupils using the highly phonetic approach were achieving at a significantly higher level than the other group on a composite reading score and all subtests of the *Stanford Achievement Test*.[20]

Results reported by Sheldon and Lashinger of a controlled study of first grade reading made a comparison of achievement in seven classrooms receiving instruction in a basal reader and seven classrooms receiving instruction by a synthetic phonics method.[21] Exhaustive analysis of achievement at the end of grade one indicated that children achieved well by both methods. Neither method showed any superiority for instruction at first grade level.

Murphy designed a study to evaluate, among other things, the effect of a speech-based synthetic phonics program on beginning reading.[22]

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[20] Harold J. Tanyzer and Harry Alpert, "Three Different Basal Reading Systems and First Grade Reading Achievement," *The Reading Teacher*, XIX (May, 1966), 636-642.

[21] William D. Sheldon and Donald R. Lashinger, "Effect of First Grade Instruction Using Basal Readers, Modified Linguistic Materials and Linguistic Readers," Cooperative Research Project No. 2683, Syracuse University, Syracuse, New York, 1966.

She compared classes receiving instruction in a basal reader, a basal reader supplemented by daily lessons in Speech-to-Print phonics, and the basal reader supplemented by Speech-to-Print phonics plus seat work consisting of practices involving writing. Results measured by the Stanford Achievement Test showed that the early teaching of the speech-based phonics resulted in significantly higher achievement in reading and spelling at the end of grade one.

The results of the studies cited above can only lead to the conclusion that children can learn to read successfully by either a method which emphasizes a strong synthetic phonics base as the main approach to word recognition in beginning reading, or by the methods embodied in the basal reader approach which provides the child with skills in phonic analysis plus a combination of other word recognition skills. Neither approach has been demonstrated to be conspicuously superior under all conditions.

During the past six years there has been increased interest in the contributions that the science of linguistics may make to beginning reading instruction. A variety of new linguistically-based materials have recently appeared on the market. Several basal systems have modified their materials in light of the linguists' findings. Professional organizations such as the National Council of Teachers of English and the International Reading Association have provided workshops dealing with linguistics and reading at their annual conventions. In addition, professional journals are publishing a rapidly increasing number of articles dealing with this topic. Unfortunately, very few of these articles involve attempts at an objective evaluation of linguistically-based instructional materials in well-controlled, classroom experimentation. Rather, most comments have expressed the writer's opinion as he tried to explain the values or weaknesses of such materials.

One of the few reports of a beginning reading program using linguistic materials was presented by Goldberg and Rasmussen.[23] They attempted no formal evaluation of their program but they felt that their phonemic word approach was successful in teaching children in their school to read. Furthermore, they were more than satisfied with the pace at which the children learned.

Sister Mary Fidelia compared the effectiveness of the Bloomfield linguistic approach and a phonics program and found no significant differences between the mean scores of the control and experimental groups in the areas of total reading, paragraph meaning, and word meaning.[24] However, she stated that a full evaluation of the Bloomfield approach could be made only after the children had completed the entire program. This program is usually completed at the end of second or beginning of third grade.

Another study compares a modified version of Bloomfield's linguistic approach and a basal reader approach to beginning reading.[25]

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[23] Lynn Goldberg and Donald Rassmussen, "Linguistics and Reading," Elementary English, XL (March, 1963), 242-247.

[24] Sister Mary Fidelia, "Bloomfield's Linguistic Approach to Word-Attack," (Unpublished doctoral dissertation, Department of Education and Psychology, University of Ottawa, 1959).

[25] Sister Mary Edward, "A Modified Linguistic Versus a Composite Basal Reading Program," Reading Teacher, XVII (April, 1964), 511-15.

Bloomfield's method was modified to the extent that some sight words were taught from the beginning. The subjects in this study received instruction in one of the two approaches for three years and analysis of data was done at the beginning of the fourth year of instruction. The findings show that:

> Although both samples performed above the national norms on all reading tests, the boys and girls of the experimental group recognized words in isolation more readily, used context with greater facility, had fewer orientation problems, possessed greater ability to analyze words visually and had greater phonetic knowledge than boys and girls taught with the control method. There was no significant difference between the two groups in their ability to synthesize words.[26]

It was found that all children benefited from instruction in the modified Bloomfield linguistic approach. However, low and average ability groups appeared to profit relatively more than did children of high ability in the experimental group. Unfortunately, no information was presented in this report on the achievement of the experimental and control groups at the end of grades one and two.

McDowell also reports achievement results of a group of fourth graders who had used a modification of the Bloomfield linguistic approach.[27] He compared results obtained by this group to results obtained by a group of fourth graders instructed by conventional methods. Comparisons were made on eight reading criteria. Of the eight, five showed no significant differences, one favored the linguistic group and two favored the conventional group. Apparently McDowell's population was equally successful with either method.

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[26] Ibid., p. 512.

[27] McDowell, Rev. John B., "A Report on the Phonetic Method of Teaching Children to Read," Catholic Education Review, LI (October, 1953), 506-519.

Sheldon and Lashinger included experimentation with the Bloomfield-Barnhart linguistic method of beginning reading as part of their study.[28] In comparing achievement of seven classes instructed with this technique to that of the seven basal and seven phonics classes no significant differences in achievement in reading skill could be demonstrated. It could only be concluded that children learned to read as well as, but no better, than children instructed by the other two methods. It is interesting to note that even though the Bloomfield-Barnhart method minimizes emphasis on comprehension the children instructed by this method were not significantly different in their ability to comprehend printed material than children instructed by the basal method where comprehension is systematically developed from the very beginning.

Davis reports on results of a study that essentially compares a linguistic approach as a supplement to a basal reader alone.[29] Davis' supplementary lessons are non-published materials described as a "phonemic structural approach," These materials were used with the experimental group for twenty-five minutes daily in addition to the regular basal instruction. The control group spent an equivalent amount of time on only the basal materials. Progress of the two groups was assessed by the Metropolitan Achievement Test. The experimental group was superior to the control group on word recognition at the .025 level of confidence at the end of grade one. Non-significant differences in achievement were observed in all other subtests. Results of testing at the end of grade two showed no differences in achievement between experimental and control groups.

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[28] Sheldon and Lashinger, Op. cit.

[29] R. C. Davis, "Phonemic Structural Approach to Reading Instruction," Elementary English, XXXXI (March, 1964), 218-223.

Schneyer studied the effects of a purely linguistic approach to beginning reading instruction. The instructional materials used were prepared by an outstanding linguist, Charles C. Fries. Schneyer's control group was instructed with a widely used basal reader. Achievement of the two groups was compared on the Stanford Achievement Test, and a linguistic reading test. Results showed the linguistic group to be superior on the linguistic reading test. The basal group was superior on the Stanford subtests for Word Reading, Spelling, and Word Study skills. High ability children of the basal group were superior to similar children in the experimental group on the Stanford Paragraph Meaning subtest. High and average children of the basal group achieved significantly higher on the Stanford Vocabulary subtest.[30]

Ruddell designed an experiment to compare achievement of first graders instructed in materials with regular phoneme-grapheme correspondences to achievement attained by first graders instructed by a basal reader approach where phoneme-grapheme correspondences are not controlled. The experimental material used is prepared by a linguist in programmed format. Ruddell concluded that the program containing the high degree of phoneme-grapheme consistency resulted in significantly higher achievement in word reading, word study, skills, and regular word identification scores than did the control method. This experimental method, when supplemented with special emphasis on language structure related to meaning, also resulted in significantly superior paragraph and sentence meaning scores. When this additional emphasis on language structure related to meaning was employed as supplement to the control program no facilitating effect on comprehension could be demonstrated.[31]

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[30] J. Wesley Schneyer, "Reading Achievement of First Grade Children Taught by a Linguistic Approach and a Basal Reader Approach," The Reading Teacher, XIX (May, 1966), 647-652.

The scarcity of controlled experimentation with linguistic approaches and the inconclusive evidence presented by the many phonics versus basal reading studies prompted the Sheldon and Lashinger study of first grade reading referred to above. The following chapter describes the research procedures employed in continuing the experimental study with the same children through their second grade year.

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[31] Robert B. Ruddell, "Reading Instruction in First Grade with Varying Emphasis on the Regularity of Grapheme-Phoneme Correspondence and the Relation of Language Structure to Meaning," The Reading Teacher, XIX (May, 1966), 653-660.

CHAPTER III -- PROCEDURES

Introduction

The study of reading at second grade level described in this chapter was one of fourteen such studies conducted during the 1965-66 school year. Each of these studies was a continuation of one of twenty-seven cooperative research studies done under the sponsorship of the United States Office of Education during the preceding school year.

Each of these studies has its own unique identity in that each explored a different aspect of primary reading instruction. By agreement of the individual directors involved certain common procedures were followed and certain common data were gathered. The common data will be analyzed and reported on by the project Coordinating Center at the University of Minnesota. The unique information obtained by each individual study will be reported individually.

The administrators and supervisors of the three school districts that participated in the first year of this study were eager to have the study continued for a second year. Their complete cooperation made it possible for the research staff to continue the treatment and observations begun in the first grade with the same children through second grade.

Selection of the Sample

Of the 467 children who made up the population of the First Grade Study, 376 were still available for participation in the second year of the study. Each of these pupils continued with the same instructional program he had had in first grade. At the end of their kindergarten year each of these children had been assigned to a teacher for first grade instruction following the usual administrative procedures of each district. Twenty-one teachers in twenty-one classrooms were involved. A table of random numbers was used to assign each teacher and her pupils to a treatment group.

At the second grade level each of these twenty-one classroom groups was still available for study. This time each class was assigned to a teacher according to the administrative procedures customarily used for assignment of classes by the building principal. In two classrooms the children continued through first and second grade with the same teacher. Both of these classes were receiving instruction in the linguistic materials. Each teacher in the study gave her full interest, cooperation and support to the study. Table I shows the distribution of classes from each school district within each treatment group.

TABLE I

ASSIGNMENT OF CLASSES TO TREATMENT GROUPS

	School Districts		
	A	B	C
Basal Reader Program	2	3	2
Modified Linguistic Materials	2	2	3
Linguistic Readers	3	2	2

Pre-Experiment Activities

A one-day workshop was held for all the participating second grade teachers the first week in September, 1965. The meeting was planned to elicit the interest and full cooperation of the teachers. Background information on the purposes and procedures that were followed during the first year were explained. The relationship of the present year's work to that of the preceding year was made clear. The part that the local study was to play in the larger cooperative research effort was discussed.

Specialists in the theory and use of each of the three types of material to be used as a basic instructional tool were present. The specialists worked with the teachers that would be using each of the materials to provide understanding of its unique features and methods of instruction. The philosophy and rationale of each program was explained. The materials to be used were displayed. Teaching procedures that would be most effective with each approach were discussed.

The role of the research personnel as observers and consultants was explained to the teachers at this meeting. Techniques and procedures to follow relative to the listening and viewing centers to be provided for each classroom were demonstrated.

The orientation provided by the representatives of the three programs was considered to be very necessary. The experience in teaching reading brought to the study by the twenty-one teachers was overwhelmingly basal reader oriented. Each of the other two approaches required the teacher to assume a new attitude concerning materials and rationale of the particular program to which they had been assigned. Even the two teachers who were continuing with the linguistic program were to be working at a different level than previously.

In-Service Activities

Three other in-service meetings were held during the school year for all participating teachers of each instructional group. Each of these meetings was held for one hour under the leadership of the research personnel. Procedures of the study relative to gathering test and other data were discussed. Time was provided for teachers to exchange ideas on instructional techniques they had found valuable. Teacher made materials for use with the listening viewing centers and for supplementing instruction in skill development were exchanged.

Testing

During September, 1965, all participating pupils were administered the Stanford Achievement Test, Primary I Battery, Form W.[1]

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[1] Truman L. Kelley and others, Stanford Achievement Test, Primary I Battery, Form W (New York: Harcourt, Brace and World, Inc., 1964).

Late in May, at the close of the instructional period the Stanford Achievement Test, Primary II Battery, Form W[2] was given to all pupils as a post-test measure of achievement.

A randomly selected sub-sample of fifty children from each treatment group had received, in addition to tests administered to all subjects, special testing at the end of the first grade instructional period. Each of these children who had participated in the study throughout the second grade instructional period was again administered a series of special tests. The tests administered to this sub-sample were the Gilmore Oral Reading Test,[3] the Fry Test of Phonetically Regular Words,[4] and the Gates Word Pronunciation Test.[5] Enough children were selected at random from each of the treatment groups to fill in any vacancies that had occurred in the sub-sample since grade one. Each child in the sub-sample was also required to prepare a writing sample. This sample was prepared in response to a standard stimulus story used by all cooperating second grade studies.

Additional pre-test data that had been gathered at the beginning of grade one was utilized in analysis of results in this study of second grade reading. This included data from administration of the Pintner-Cunningham Primary Test, Form A;[6] the Metropolitan-Readiness Test;[7] the Murphy-Durrell Diagnostic Reading Readiness Test;[8] the Thurstone Pattern Copying;[9] and the Thurstone Identical Forms Tests.[10]

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[2] Truman L. Kelley and others, Stanford Achievement Test, Primary I Battery, Form W (New York: Harcourt, Brace and World, Inc., 1964).

[3] John V. Gilmore, Gilmore Oral Reading Test, (New York: Harcourt, Brace and World, Inc., 1952).

[4] Printed for use in the U.S.O.E. Primary Reading Studies.

[5] Printed for use in the U.S.O.E. Primary Reading Studies.

Instructional Period

The instructional period under observation in this study was 140 school days extending from September, 1965, through May, 1966. During the instructional period a member of the university research staff was assigned to each of the three treatment groups. These people observed instruction in the classrooms daily on an unscheduled basis. This provided for observation of the reading instruction in each classroom every seven or eight days. This observation was felt necessary to assure that the materials were being used as they were designed to be used and that other conditions of the study were being met. These observers also provided assistance to the teacher in evaluating the achievement and instructional needs of individual pupils. Help was given where necessary in utilizing the listening and viewing center equipment and in planning or preparing teacher made lessons for use with this facility. During their observations the research staff members were alert to common problems that could be dealt with effectively in the periodic teacher group meetings.

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[6] Rudolph Pintner and others, Pintner-Cunningham Primary Test, Form A (New York: Harcourt, Brace and World, Inc., 1964).

[7] Gertrude Hildreth and others, Metropolitan Readiness Test, (New York: Harcourt, Brace and World, Inc., 1964).

[8] Helen Murphy and Donald Durrell, Murphy-Durrell Diagnostic Reading Readiness Test, Revised Edition (New York: Harcourt, Brace and World, Inc., 1964).

[9] Printed for use in the 27 U.S.O.E. First Grade Studies.

[10] Printed for use in the 27 U.S.O.E. First Grade Studies.

All three experimental groups of teachers received the same type, quantity, and quality of supervisory aid by the research staff. Throughout the instructional period all teachers were encouraged to use sound instructional practices. Special emphasis in all treatment groups was placed on working with children at their appropriate instructional level. This was achieved by flexible grouping, individualized help, and differentiated assignments.

Some of the children completed the materials for the modified linguistic and the linguistic materials before the end of the instructional period. The reading skills of these pupils were carefully assessed by a member of the research staff and recommendations were made for their placement at the appropriate level of the basal reading series being used as a standard instructional material in the pupil's school.

The daily instructional time for each of the experimental groups was one hour. Approximately one third of this time was spent in small group instruction under the direct guidance of the teacher. The remaining time was spent in supporting activities planned to reinforce specific reading skills, broaden concepts and to extend the child's pleasure in reading. Many attractive trade books, films, and records were provided for each classroom for these supporting activities. A period of thirty minutes per day in addition to the basic instructional time was recommended for free reading activities.

Teachers in all classrooms followed these recommended instructional times as closely as possible. Observations by the research staff indicated that in no case were these recommendations for instructional time violated to a significant degree in any treatment group.

Description of Materials

Each of the twenty-one treatment groups continued receiving instruction by the same method and with the same materials as in first grade. The Ginn Basic Readers[12] were used for basic instruction in seven classrooms. The Ginn program was chosen originally because it is one of the most complete of the basal approaches in terms of instructional and supplementary materials and guidance for teachers. It is very representative of the basal reader approach in terms of underlying philosophy and rationale.

The Ginn second year program provides for continued sequential development of word recognition and comprehension skills. The skills introduced in first grade are refined and extended. Greater emphasis is placed on phonic and structural analysis of words at this level. The approach to this instruction is essentially an analytic one in which the child uses known words as a basis for developing his auditory perception of sounds and then learns to associate this auditory image with the correct visual symbol within the structure of a known word. He then learns to extend the utility of these skills through analogy to unknown words.

The Ginn Basic Readers emphasize reading for meaning by systematic training in a wide variety of evaluating, comprehending, and organizing skills. Special guidance is provided for the teacher in utilizingeach story selection as a vehicle for developing those meaning skills most appropriate to the selection. Many workbook activities are constructed as follow-up reinforcement of each skill taught. The materials are constructed in a manner that provides systematic practice at spaced intervals for each comprehension skill.

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[12] David H. Russell and others, Ginn Basic Reading Series (Boston: Ginn and Company, 1964).

Vocabulary is controlled in this as in other basal texts. The books for grades one and two present a cumulative total of 795 words. This is in no way to be interpreted as the child's total reading vocabulary, however. His growing word analysis skills permit him to recognize hundreds of additional words.

Seven classrooms continued work in the modified linguistic materials of the Structural Reading Series[13] begun in grade one. This series consists of five worktexts designed to be completed by the average class by the end of second grade. The publisher describes this program as a modified linguistic approach. Bleismer and Yarborough,[14] in their study of first grade reading, have classified the approach as a synthetic phonic approach. The techniques used in this method, of learning the sounds of letters and structural parts of words and then learning skills of combining these elements into words, would tend to classify it as a synthetic phonic approach. It is distinguished from some synthetic phonic methods by its avoidance of piecemeal blending of isolated sounds. The emphasis is on recognizing and combining larger structural elements within the word. Words are studied in phonetically related groups so that the child can achieve independent recognition of words by insight into these phonetic relationships.

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[13] Catherine Stern and others, Structural Reading Series (Syracuse, New York: L. W. Singer Company, Inc., 1963).

[14] Emery P. Bleismer and Betty H. Yarborough, "A Comparison of Ten Different Beginning Reading Programs in First Grade," Phi Delta Kappan, XLVI (June, 1965), 500-504.

In addition to this systematic technique of word recognition the Structural Reading Series is designed as a completely integrated language arts program. The child practices writing skills from the beginning of the program. Listening and speaking skills are developed throughout the materials beginning at the readiness level.

This program, like the basal system used in the study, is planned to develop reading comprehension and thinking skills. "Ample opportunity is given to develop related reading skills, such as generalization, summarizing, following directions, developing astuteness of observation, and developing the ability to think logically."[15]

The seven classrooms that formed the remaining treatment group continued to receive instruction in the Bloomfield-Barnhart Let's Read[16] linguistic readers. This is a series of nine readers and accompanying workbooks which the authors designed to be completed in two years by the average class.

The first step in this program for the child is mastery of recognition of the letters of the alphabet. The vocabulary of the readers is strictly controlled in that words are introduced in linguistically regular patterns. The first general pattern dealt with is the pattern of a consonant frame containing a single vowel. This is the most utilitarian pattern in English into which hundreds of monosyllabic words fit. The child is taught a single technique of word recognition. He spells and pronounces words in regular patterns such as *cat*, *hat*, *fat*, and so on until all the possible combinations of a single consonant followed by the pattern *at* are mastered. The child is dealing with a minimal contrast auditorially and a minimal contrast visually as he moves from word to word. After mastery of all possible minimal contrasts in the initial consonant position, he begins, by the same spelling and pronouncing technique, to master minimal contrasts in the final consonant position. The next step is mastery of the minimal contrasts in the short vowel sounds represented by a single vowel in the medial position. This technique of spelling and pronouncing as a technique of recognition is continued throughout the program. After mastery of all possible minimal contrasts represented by single letters in the basic consonant frame, the child is taught to deal with blends in first the initial and then the final consonant position. He then progresses to long vowel sounds represented by paired vowels in the medial position. The next basic pattern the child is taught to handle is the pattern with final *e* as a controller of vowel sound. Then the less frequent patterns in English spelling are mastered. The child at all times is dealing with the letter symbols in a specific environment and therefore with constant sound-symbol correlations. At no time are phonemes pronounced outside their environment within words, nor are letters dealt with in isolation. It is not until the child has established a stable concept of the alphabetic system of writing that he is introduced to the irregularities which are taught as exceptions to the known patterns.

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[15] Catherine Stern and others, Structural Reading Series, Book B, Teachers' Edition (Syracuse, New York: L. W. Singer Company, Inc., 1963), 5.

[16] Leonard Bloomfield and Clarence L. Barnhart, Let's Read (Bronxville, New York: C. L. Barnhart, Inc., 1963).

As soon as the child has mastered a few words in the first book he begins to read these words in simple context. No emphasis is placed on mastery of comprehension or interpretation skills in this program. The linguist's point of view of the basic task for pupils at the beginning stage of reading represented by the nine books of the _Let's Read_ series is expressed by Fries as he defines the goals of what he terms the "transfer" stage of reading. "Learning to read in one's native language is learning to shift, to transfer, from auditory signs for the language signals, which the child has already learned, to visual graphic signs for the same signals."[17] Therefore, the basic task of pupils at this stage of reading is interpreted to be learning to make high speed responses to visual stimuli, that is spelling patterns that represent language signals. It is the opinion of the authors of the _Let's Read_ materials that any emphasis placed on comprehension skills at this stage of learning will inhibit the development of these high speed discrimination responses. This cannot be interpreted to mean that comprehension is not the ultimate goal of reading at more mature stages.

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[17] Charles C. Fries, _Linguistics and Reading_ (New York: Holt, Rinehart and Winston, Inc., 1962), 188.

To avoid unnecessary distractors from the major task of associating rapid visual discriminations with appropriate speech sounds the authors designed the Let's Read materials completely without illustration or decoration. The child is trained to recognize words by the single technique described above. No picture clues can be utilized.

Listening-Viewing Activities

A listening-viewing center was established in each of the twenty-one classrooms at the beginning of the school year. These centers contained the following equipment:

1. a tape recorder
2. a film strip projector
3. a small screen (18" x 24")
4. a record player
5. a jackbox containing eight sets of headphones.

Each teacher was asked to select the pupils in the lower third of her class who were least mature in language skills. Ninety minutes weekly listening-viewing activity was planned for these pupils. These periods were not planned for formal skill development but rather as added opportunities for language experiences. These activities permitted children to hear language used well in interesting stories thus helping them to become more familiar with the language of books. This was an opportunity for the child to expand his listening and speaking vocabulary through the concept development that was a part of these experiences. The nature of the equipment and intrinsic interest value of the instructional materials used was also conducive to extending the child's span of attention in a listening experience. These ancillary skills are felt to be important to the child's progress in reading.

Use was also made of this listening-viewing equipment for skill development. Teachers prepared taped lessons to give further practice on skills taught in the basic reading instruction.

Supplementary Reading

Thirty minutes of free reading time were provided daily for all classes. This was felt to be an important part of the child's reading program. It was during this time that the child had an opportunity to use his expanding reading skills in a setting highly satisfying to himself. During this time the child was free to choose from a wide variety of books the ones on the level of difficulty and on the topic of his choice.

Because of the inequality of library facilities in the schools involved, a great many children's books were supplied to each classroom. These ranged in difficulty from pre-primer level to about fourth grade level to accommodate the spread in reading abilities by the end of the year. Every type of book of interest to children of this age was included.

Description of the Communities

The classrooms involved in this study are located in five communities. One is a medium sized urban community; the remaining four are suburban areas of the urban community.

TABLE II

COMMUNITY CHARACTERISTICS FOR EACH EXPERIMENTAL CLASSROOM

	Median No. of Years Education of Adults	Median Income of Family in Community of Census Tract	Population of Community	Type of Community
Basal Reader Program				
Classroom 1	12.1	$6200	216,000	Urban
Classroom 2	12.7	7400	216,000	Urban
Classroom 3	12.9	8200	12,000	Suburban
Classroom 4	12.9	8200	12,000	Suburban
Classroom 5	12.0	8200	12,000	Suburban
Classroom 6	11.9	6700	7,300	Suburban
Classroom 7	11.9	6700	7,300	Suburban
Modified Linguistic Materials				
Classroom 1	12.1	7300	216,000	Urban
Classroom 2	12.0	6000	216,000	Urban
Classroom 3	12.5	6000	216,000	Urban
Classroom 4	12.9	8200	12,000	Suburban
Classroom 5	12.9	8200	12,000	Suburban
Classroom 6	11.9	6700	7,300	Suburban
Classroom 7	11.9	6700	7,300	Suburban
Linguistic Readers				
Classroom 1	8.8	5000	216,000	Urban
Classroom 2	15.5	8200	216,000	Urban
Classroom 3	10.2	5600	4,700	Suburban
Classroom 4	10.2	5600	4,700	Suburban
Classroom 5	12.9	8200	12,000	Suburban
Classroom 6	12.9	8200	12,000	Suburban
Classroom 7	11.9	6700	7,300	Suburban

* Information in this table came from the 1960 census report.

School Districts

Three school districts cooperated in the study. One district was the city school district of the urban community. The remaining two were central school districts each of which served two of the suburban communities.

TABLE III

SCHOOL DISTRICT DESCRIPTION

	School District		
	A	B	C
Length of School Day	5½ hours	5 hours	5 hours
Length of School Year	185 days	182 days	185 days
No. of Second Grade Rooms in District	19	12	105½
ADA Cost per Pupil	$700-799	$700-799	$700-799

Description of Teachers

The teachers participating in the study were well trained and experienced. There were no non-degree or uncertified teachers. Their experience ranged from no previous experience to a maximum of 22 years. Only one teacher was in her first teaching year. Data relative to teacher age, education, and experience is summarized in Table IV.

TABLE IV

INFORMATION ON TEACHERS*

	Average Age years	Education			Experience in years	
		B.S.	B.S.+	M.S.	Range	Average
Basal Reader Teachers	31	2	5	0	7-1	2½
Modified Linguistic Teachers	37	0	7	0	17-3	5
Linguistic	40	3	3	1	22-0	6

* Three teachers in the basal group were replaced during the instructional period. Data pertains to the teacher who worked last with the group.

Description of the Sample

All children in the present study were part of the first year study for that entire instructional period. Of the 467 children who were studied in the first grade, 376 were available for instruction, observation and testing throughout the entire second grade instructional period. All pupils in the study had had kindergarten training. The classrooms using the basal approach averaged 26 children each with a range from 21-32. The modified linguistic and linguistic classes each averaged 24 pupils. The range in the modified linguistic rooms was from 16-32, while the linguistic classes ranged from 20-28 in class size. The entire population of a given classroom was not necessarily part of the second grade study. In the classrooms where children who had been part of the first grade study had dropped out, class size was equalized according to the prevailing administrative procedures. The new children received the same instruction as the rest of the class but were not counted as part of the study. Further data on the nature of the groups making up the sample is included in the data analysis in Chapter IV.

All information pertaining to community, school district, teachers, and children has been coded on duplicate decks of data cards. One deck has been filed with the University of Minnesota Coordinating Center and will be used in combining data from all fourteen cooperative studies.

CHAPTER IV -- ANALYSIS OF THE DATA

Introduction

The data analysis reported in this chapter was made possible through the use of the Syracuse University Computing Center.

A one way analysis of variance was used tocompare treatment groups on pre-test measures. These measures include readiness and intelligence tests given at beginning of grade one and pre-treatment achievement tests given at the beginning of grade two. Analysis of covariance was used for post-treatment comparison. Analysis of covariance using readiness factors, intelligence, and achievement level at beginning second grade as covariates were performed. Data on achievement means of subgroups based on ability level, sex, and treatment are reported.

Analysis of Pre-Experiment Status of Pupils

Table V includes pre-experiment information on pre-school attendance and chronological age of pupils studied during their second year of instruction. The data is based on the 376 pupils who were available for study throughout both the first and second grade instructional periods. Since the randomization procedures of this study were applied to classroom groups, data shown represents means of classroom means.

TABLE V

RESULTS OF THE ANALYSIS OF VARIANCE OF PRE-SCHOOL ATTENDANCE AND CHRONOLOGICAL AGE OF THE THREE TREATMENT GROUPS
SEPTEMBER 1964

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level*
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Pre-School Attendance	3.54**	.51	3.23**	.19	3.31**	.58	.89	N.S.
Chronological Age (Months)	75.01	1.35	75.37	1.42	76.61	1.21	2.79	N.S.

* F.95 = 3.55, F.99 = 6.01 with 2 and 18 degrees of freedom.

** This figure is the code provided by the Minnesota Coordinating Center and indicates that the mean pre-school attendance was between 101 and 200 half-days of kindergarten, nursery and/or church school experience.

No significant differences were found between treatment group means for either pre-school attendance or chronological age. All pupils in the study had had kindergarten experience.

All pupils were given the *Pintner-Cunningham Primary Test* at the beginning of grade one. Table VI shows the analysis of variance of *Pintner-Cunningham* raw scores and derived mental ages for pupils studied in grade 2. The data shown represents means of classroom means.

TABLE VI

RAW SCORE MEANS OF TREATMENT GROUPS AND RESULTS OF THE ANALYSIS OF VARIANCE OF PINTNER-CUNNINGHAM RAW SCORE AND MENTAL AGE

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level*
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Pintner-Cunningham Raw Score (Sept. '64)	42.19	2.04	39.17	3.91	39.41	4.12	1.62	N.S.
Pintner-Cunningham Mental Age (Sept. '64)	81.56	4.32	78.34	6.76	78.99	5.87	.61	N.S.

* F.95 = 3.55, F.99 = 6.01 with 2 and 18 degrees of freedom.

A slight numerical superiority in favor of the Basal Reader Group is indicated by the data. The two other treatment groups are almost identically matched. The slight superiority for the Basal Reader Group does not approach significance at the .05 level. It can be assumed that the three groups did not differ significantly on the ability variable.

Four measures of reading readiness were administered to all pupils before first grade instruction began. The subtest raw scores of each of these tests were evaluated by analysis of variance to determine whether there were any important differences between treatment groups on the measured readiness skills. Analysis of variance was also applied to the total scores of those tests which yield results in the form of a total score. Table VII is a summary of the results of this analysis of variance for the subtest mean scores obtained on the Murphy-Durrell Diagnostic Reading Readiness Test.

TABLE VII

RAW SCORE MEANS OF TREATMENT GROUPS AND RESULTS OF THE ANALYSIS OF VARIANCE OF THE MURPHY-DURRELL DIAGNOSTIC READING READINESS TEST (SEPTEMBER, 1964)

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Murphy-Durrell Diagnostic Reading Readiness Test								
Identification of Phonemes	34.59	5.34	26.83	7.86	30.76	6.46	2.39	N.S.
Capital Letter Names	21.16	1.76	18.56	2.55	19.70	3.93	1.42	N.S.
Lower Case Letter Names	16.90	1.61	14.46	3.09	15.86	3.20	1.41	N.S.
Total Letter Names	37.94	3.16	32.64	5.38	35.76	7.00	1.69	N.S.
Learning Rate	11.06	1.60	9.53	1.57	10.27	1.36	1.79	N.S.

* F.95 = 3.55, F.99 = 6.01 with 2 and 18 degrees of freedom.

The raw score means of children in the Basal Reader Group showed a slight, consistent superiority over the other two treatment groups on all Murphy-Durrell subtests. The means for children in the Modified

Linguistic group were consistently the lowest on all subtests with the Linguistic group occupying the middle position. Statistically these differences were non-significant. The F ratio in no case approached significance at the .05 level.

Table VIII is a summary of the analysis of variance of the subtest and total raw score means of the Metropolitan Readiness Test for the three treatment groups.

TABLE VIII

RAW SCORE MEANS OF TREATMENT GROUPS AND RESULTS OF THE ANALYSIS OF VARIANCE OF THE METROPOLITAN READINESS TEST (SEPTEMBER, 1964)

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Metropolitan Readiness Test								
Word Meaning	10.91	1.15	10.07	1.53	9.49	1.81	1.56	N.S.
Listening	10.46	.54	9.61	1.04	9.57	1.27	1.74	N.S.
Matching	9.17	1.33	8.59	1.83	8.70	1.89	.23	N.S.
Alphabet	11.29	1.24	9.49	1.71	10.11	1.68	2.41	N.S.
Numbers	14.96	1.32	13.16	2.65	13.56	1.91	1.51	N.S.
Copying	7.07	.84	5.90	2.43	6.50	1.34	.86	N.S.
Total	63.96	5.09	56.70	9.67	58.11	9.11	1.53	N.S.

* F.95 = 3.55, F.99 = 6.01 with 2 and 18 degrees of freedom.

Raw score means on all subtests and the total raw score mean of the Metropolitan Readiness Test are numerically slightly greater for the Basal Reader Group. These differences are not statistically important. In no case did the F ratio approach significance at the .05 level.

The data summarized in Table IX is the result of an analysis of variance performed on subtest and total means of the Allyn and Bacon Pre-Reading Test for each of the three treatment groups.

TABLE IX

RAW SCORE MEANS OF TREATMENT GROUPS AND RESULTS OF THE ANALYSIS OF VARIANCE OF THE ALLYN AND BACON PRE-READING TEST

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Allyn and Bacon Pre-Reading Test								
Auditory Discrimination -- Rhyming Words	18.97	.44	16.07	2.12	17.67	1.37	6.76	.01
Auditory Discrimination -- Initial Consonants	15.16	.89	14.96	1.93	14.21	1.76	.68	N.S.
Visual Discrimination -- Word Forms	17.23	1.87	15.69	1.70	17.21	1.15	2.15	N.S.
Comprehension	15.30	.48	14.59	1.01	14.56	1.14	1.46	N.S.
Total	65.89	3.02	61.34	5.25	63.67	4.11	2.02	N.S.
Perceptual-Motor	30.41	1.81	30.89	2.77	31.74	2.68	.53	N.S.

* F.95 = 3.55, F.99 = 6.01 with 2 and 18 degrees of freedom.

Again, the mean scores of the Basal Reader group are numerically superior to the means of the other two groups in every case. These differences are nonsignificant in all instances except in the Rhyming Words Sub-test, where a significant difference at the .01 level is revealed. This particular sub-test showed a correlation with reading achievement of .22 on tests administered at the end of grade one. The correlation was .21 with reading achievement at the end of grade two. Neither of these correlations is of sufficient magnitude to be of any importance as a predictive criterion of reading success and can safely be ignored as an important difference between the groups.

Results of analysis of variance of the two Thurstone tests are presented in Table X.

TABLE X

RAW SCORE MEANS OF TREATMENT GROUPS AND RESULTS OF THE ANALYSIS OF VARIANCE OF THE THURSTONE PATTERN COPYING AND IDENTICAL FORMS

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Thurstone Pattern Copying	9.97	2.03	7.80	3.16	11.03	2.64	2.70	N.S.
Thurstone Identical Forms	17.66	2.84	16.23	2.66	14.74	2.17	2.25	N.S.

*F.95 = 3.55, F.99 = 6.01 with 2 and 18 degrees of freedom.

The prevailing pattern of slight but non-significant superiority for the Basal Group is maintained in the results of the Thurstone Identical Forms. On the Thurstone Pattern Copying test the Linguistic Group is somewhat superior but the difference is non significant.

In summary, results of analysis of variance of four measures of reading readiness and the test of ability show the three treatment groups to be equivalent on the readiness and mental factors measured. All differences revealed were nonsignificant except for the Rhyming Words Sub-test of the Allyn and Bacon Pre-Reading Test. Since, as indicated by the small correlation coefficients of this subtest with reading skill, the abilities underlying success on this test account for such a minor portion of variance in reading achievement this one minor difference can safely be disregarded. The assumption can be made that the three treatment groups were statistically equivalent in mental ability and readiness for reading as measured by readiness tests at the beginning of first grade instruction.

Analysis of Achievement Status of Pupils Before the Second Grade Instructional Period

The Stanford Achievement Primary I Battery, Form X was administered in May, 1965. Results of an analysis of variance of means of the three treatment groups is presented in Table XI.

TABLE XI

RAW SCORE MEANS OF TREATMENT GROUPS AND RESULTS OF THE ANALYSIS OF VARIANCE OF THE STANFORD ACHIEVEMENT TEST PRIMARY I BATTERY, FORM X (MAY, 1965)

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Stanford Achievement Test								
Word Reading	21.21	2.97	21.97	4.73	19.61	4.46	.60	N.S.
Paragraph Meaning	22.69	4.28	18.31	5.84	16.40	5.93	2.49	N.S.
Vocabulary	25.67	2.91	22.01	3.53	22.20	4.55	2.14	N.S.
Spelling	13.76	3.28	11.49	5.03	11.03	3.90	.88	N.S.
Word Study Skills	42.34	3.33	39.13	6.73	37.01	5.31	1.79	N.S.

*F.95 = 3.55, F.99 = 6.01 with 2 and 18 degrees of freedom.

No statistically significant differences in means of treatment groups were evident at the completion of the first grade instructional period. As in the case of the pre-experiment ability and readiness measures, a minor numerical superiority favoring the Basal Reader Group is revealed by examination of means. This held true consistently for all means except the mean for Word Reading where the Modified Linguistic group mean was fractionally superior. Since all differences were non-significant, the assumption that the three treatment groups were equal in ability at time of testing on the skills measured by this test can be safely made.

Because of the possibility of either a gain or loss in skills in the four month interim between the close of the first grade instructional period and the beginning of second grade, another form of the Stanford Achievement Test, Primary I Battery, was given in September of 1965 as a pre-test measure. This precaution was taken to be certain that the experimental groups were equated in skill at that time so that a meaningful measurement could be made of any treatment effects that might occur during grade 2. Table XII is a summary of an analysis of variance performed on the treatment group means achieved on the various subtests.

TABLE XII

RAW SCORE MEANS OF TREATMENT GROUPS AND RESULTS OF THE ANALYSIS OF VARIANCE OF THE STANFORD ACHIEVEMENT TEST, PRIMARY I BATTERY, FORM W (SEPT. 1965)

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Stanford Achievement Test								
Word Reading	24.91	3.19	23.66	5.24	21.46	5.80	.90	N.S.
Paragraph Meaning	24.41	4.80	22.24	6.81	20.80	7.16	.58	N.S.
Vocabulary	26.96	4.29	24.91	4.14	24.67	3.88	.65	N.S.
Spelling	10.10	2.61	11.34	3.53	10.97	4.03	.24	N.S.
Word Study Skills	40.99	4.63	40.84	5.15	39.16	6.98	.22	N.S.

* F.95 = 3.55, F.99 = 6.01 with 2 and 18 degrees of freedom.

Again, each subtest mean, except one, favors the Basal Reader Group. No F ratio approaches significance, however, so the assumption of equivalence of treatment groups on these measured criterion skills can be made.

Analysis of Factors Other Than Treatment That Could Affect Pupil Progress During the Instructional Period

Certain factors other than treatment effect operate within the primary classroom and may affect achievement of pupils on criterion measures. Pupil and teacher attendance are two of these factors that are impossible to control in any experiment. Amount of time devoted to direct reading instruction might also determine to some extent the achievement of pupils. Teacher competence is a further factor that could be expected to have an important effect on the achievement of pupils.

A summary of comparative teacher and pupil absences is presented in Table XIII.

TABLE XIII

ANALYSIS OF ATTENDANCE FOR THE THREE TREATMENT GROUPS DURING THE SECOND GRADE INSTRUCTIONAL PERIOD

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Pupil Absences (Number of Days)	9.34	1.57	7.13	1.58	6.53	1.26	7.02	.01
Teacher Absences (Number of Days)	6.57	2.37	10.86	14.0	6.57	4.39	.58	N.S.

* F.95 = 3.55, F.99 = 6.01 with 2 and 18 degrees of freedom.

It can be noted that a significant difference at the .01 level was evident in the attendance of pupils. Examination of the correlation coefficients between pupil attendance and various objective and subjective criterion measures of reading achievement indicates that these correlations are extremely low and could account for only minute amounts of variability in achievement. Of thirteen such correlations, only three differ significantly from a zero correlation. The largest of these three is only of the magnitude of .20. It is reasonable, then to assume that although a statistically significant difference appears in pupil attendance this difference is of no practical importance. Exact correlational data relative to this discussion may be found on page 109.

No significant differences in teacher attendance are evident.

Competency of the teacher managing the instruction of the children is a third variable that can have important effects on achievement. The problem of assessing teacher competency is extremely complex. The method of making this assessment in this study can at best be described as crude. The three members of the research team who had periodically observed instruction in each of the classrooms was asked to assign a numerical rating to each teacher. The rating scale was from 5 to 1 with 5 being a superior rating, three an average rating and 1 designating incompetency. These ratings were not applied to any specific criteria but were essentially a subjective evaluation of over all performance. Each research staff member rated only the teachers in the one treatment group he had observed. The three staff members varied considerably in the extensiveness of their previous experience in both teaching at elementary level and in evaluating performance of teachers. The results of these ratings are presented in Table XIV.

TABLE XIV

SUMMARY OF TEACHER RATINGS FOR THE THREE TREATMENT GROUPS AND AVERAGE TEACHER RATING FOR EACH OF THE THREE GROUPS FOR SECOND GRADE INSTRUCTIONAL PERIOD

	Number of Teachers Receiving Rating		
Rating	Linguistic	Modified Linguistic	Basal
Superior	2	0	1
Above Average	1	3	1
Average	2	3	1
Below Average	2	1	4
Incompetent	0	0	0
Average Teacher Rating	3.4	3.4	2.9

Bearing in mind the limitations of this rating procedure, it can be assumed that the teachers in the three groups were comparable in competency. In all three groups a considerable within-group variability is evident. This within-group variability as it relates to pupil achievement will be discussed in detail beginning on page 102.

The amount of time devoted to direct and indirect instruction in reading could be expected to affect pupil achievement. This was controlled as closely in this study as is feasible within the limitations imposed by a number of schools within several different districts. Table XV summarizes instructional time across treatment groups.

TABLE XV

SUMMARY OF DIRECT INSTRUCTIONAL TIME, SUPPORTING INSTRUCTIONAL TIME AND TOTAL INSTRUCTIONAL TIME DEVOTED TO READING ACTIVITIES IN THE THREE TREATMENT GROUPS DURING SECOND GRADE

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level*
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Direct Instructional Time (Minutes per Week)	506.43	39.87	524.29	44.29	465.00	22.55	4.79	<.05
Supporting Time	331.43	47.41	275.71	116.06	325.71	45.86	1.11	N.S.
Total Time	837.86	51.30	800.00	112.21	790.71	52.71	.73	N.S.

* $F_{.95} = 3.55$, $F_{.99} = 6.01$ with 2 and 18 degrees of freedom.

A significant difference is shown to exist in the time devoted to direct instruction in the three groups. The Linguistic Group received significantly less direct instruction than the other two groups. This difference was equalized, however, in the supporting time for reading instruction since no significant difference in total reading time is revealed. The correlation coefficients between direct instructional time and reading achievement as measured by nine objective criteria are extremely small. On only two criteria was the correlation coefficient found to differ significantly from 0. The higher of these, r.24, the correlation between instructional time and reading rate, could explain only a very small amount of variability in achievement on that criterion. It seems safe to assume that this statistically significant difference in one aspect of instructional time is of no practical importance in evaluating treatment effects.

Analysis of Post-Treatment Data for the Three Experimental Groups

Analysis of Total Group Data. The three experimental groups were shown to be statistically equivalent on pre-test data for intelligence and various readiness factors as measured prior to first grade instruction. The three groups were also shown to be statistically equivalent on measures of achievement at pre-testing prior to the second grade instructional period. A small but consistently appearing superiority of mean scores was revealed in the data favoring the Basal Reader Group. For this reason, an analysis of covariance was chosen as the method of evaluating treatment effects. Four such analyses were run. One analysis used the *Pintner-Cunningham* Mental Age as the covariate thereby holding the factor of intelligence constant in the analysis. The second used the *Metropolitan Readiness* Total Score as the covariate in this way holding the factor of readiness as measured by this instrument constant in the analysis. Two pre-second grade achievement factors were held constant in the final two analyses. *Stanford Achievement Test* Word Reading was the covariate in one analysis. The Paragraph Meaning score of the same test was the covariate for the last analysis.

A comparison of achievement of all pupils in the three treatment groups was made on the following criterion measures;

1. The *Stanford Achievement Test*, Primary II Battery Word

Meaning Subtest.

This is a 36 item multiple choice test, graduated in difficulty, which measures the ability of a pupil to read a sentence and to select a correct word to complete the sentence.

2. The Stanford Achievement Test, Primary II Battery, Paragraph Meaning Subtest.

   This subtest is a series of paragraphs, graduated in difficulty, from each of which one or more words have been omitted. The pupil demonstrates his comprehension of the paragraph by selecting from four possible answers the proper word for each omission. The test provides a functional measure of the pupil's ability to comprehend connected discourse at varying levels of comprehension.

3. The Stanford Achievement Test, Primary II Battery, Spelling Subtest.

   This is a thirty item dictation type spelling test. The choice of words in the test was based on frequency of use in the writing of primary pupils. Although this is not a reading task, it is a closely related skill since correlations between measures of reading and spelling proved to be in the high seventies for the sample of pupils in this study.

4. Stanford Achievement Test, Primary II Battery, Word Study Skills.

   This is a sixty-four item multiple choice test in two parts.

The first part is dictated by the teacher. She reads aloud a stimulus word. The child is required to discriminate the beginning or final sound of this word and select a word that begins or ends the same from four more words read by the teacher. The last thirty-four items require the child to read a key word and find a word that has a similar designated sound in one of several other words. The focus on sound is sharpened by the use of different spellings of the same sound being used in the key word and the matching word. The skills measured by this subtest have a correlation of .79 with reading achievement for the sample of pupils in this study.

Table XVI is a summary of the analysis of covariance for the Word Reading subtest. Since randomization in this study was on the basis of random assignment of treatment to classroom,as discussed in Chapter III, this analysis was performed on means of classroom means. Therefore, the twenty-one participating classrooms give, for this analysis, a total N of 21. Each of the three treatment groups had a group N of 7.

TABLE XVI

ANALYSIS OF COVARIANCE FOR THE STANFORD ACHIEVEMENT TEST WORD MEANING SUBTEST GIVEN MAY, 1966

Covariate	Source of Variation	Sum of Squares	df	Mean Square	F*	Significance Level
Stanford Word Reading - Sept. 1965	Between Groups	26.4036	2	13.2018	9.40	.01
	Within Groups	23.8782	17	1.4046		
Stanford Paragraph Meaning - Sept. 1965	Between Groups	23.1304	2	11.5652	8.63	.01
	Within Groups	22.7834	17	1.3402		
Pintner Mental Age - Sept. 1964	Between Groups	29.8304	2	14.9152	2.69	N.S.
	Within Groups	94.1443	17	5.5379		
Metropolitan Total - Sept. 1964	Between Groups	45.646	2	22.8230	2.77	N.S.
	Within Groups	139.8658	17	8.2274		

*F.95 = 3.59, F.99 = 6.11 with 2 and 17 degrees of freedom.

Thus, by equating the groups on reading achievement at the beginning of grade two, a significant difference that can be attributed to treatment effect is noted in the skill of reading words in isolation. Holding mental ability and readiness level at beginning first grade constant did not show this effect.

The procedure recommended by Garrett[1] for determining significance of differences among adjusted Y means was used. Tables XVII through XX summarize data on the adjusted mean scores for the treatment groups and indicate which adjusted means differed significantly.

TABLE XVII

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR WORD MEANING SUBTEST GIVEN MAY, 1966
COVARIATE WORD MEANING SUBTEST GIVEN SEPT. 1965

Group	N	Mean of Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	21.46	.8120	19.64	21.27 *
Basal Reader	7	24.91	1.1538	19.86	18.50
Modified Linguistic	7	23.66	.8133	20.79	20.52 *
Total		23.34	.8615		

SD Y.x	SE_D	df	Sig. t at .01 level	Sig. Difference between Adjusted Means
1.185	.6328	17	2.90	1.84

*Differ significantly from Basal Reader mean at .01 level

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[1] Henry E. Garrett, Ph. D., Statistics in Psychology and Education, (New York: Longmans Green and Co., 1958) p. 299.

TABLE XVIII

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR WORD MEANING SUBTEST GIVEN MAY, 1966-- COVARIATE PARAGRAPH MEANING SUBTEST GIVEN SEPTEMBER 1965

Group	N	Mean of Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	20.80	.6414	19.64	20.76 *
Basal Reader	7	24.41	.7482	19.86	18.58
Modified Linguistic	7	22.24	.6448	20.79	20.95 *
Total		22.49	.6631		

$SD_{y.x}$	SE_D	df	Sig. t at .01 level	Sig. Difference between Adjusted Means
1.157	.6178	17	2.90	1.79

*Differ significantly from Basal Reader mean at .01 level.

TABLE XIX

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR WORD MEANING SUBTEST GIVEN MAY 1966 -- COVARIATE PINTNER MENTAL AGE SEPTEMBER 1964

Group	N	Mean of Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	78.99	.6399	19.64	20.06
Basal Reader	7	81.56	.7705	19.86	18.61
Modified Linguistic	7	78.34	.5992	20.78	21.62
Total		79.63	.6458		

Differences in adjusted criterion means N.S.

TABLE XX

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR WORD MEANING SUBTEST GIVEN MAY 1966 -- COVARIATE METROPOLITAN READINESS TOTAL SEPTEMBER 1964

Group	N	Mean of Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	58.11	.3264	19.64	20.24
Basal Reader	7	63.96	.6007	19.86	18.09
Modified Linguistic	7	56.70	.4235	20.79	21.96
Total		59.59	.4058		

Differences in adjusted criterion means N.S.

In summary, both the Linguistic Group and the Modified Linguistic Group means were significantly superior to the mean of the Basal Reader Group when achievement at beginning second grade level was equalized by covariance. Holding readiness and intellectual level constant did not reveal a significant difference in adjusted mean score on the skill of word reading. The adjusted means, however, conformed to the pattern established in the two significant analyses in that the adjusted mean for the Basal Group was, in each case, the smallest.

Examination of Table XVII shows the mean score of the Basal Reader Group to be superior to the other two groups on this word reading skill at the beginning of the second grade period of instruction. We can infer from this that the Basal Reader procedure provided for a slightly more rapid rate of growth in this skill at first grade level than the other two procedures. This rate did not prove to be significantly superior to the rate of growth produced by the other two methods as shown earlier in Table XII. The fact that the scores at the end of second grade do show significant differences favoring both the other two treatment groups indicate that at this grade level the Linguistic and the Modified Linguistic methods enabled pupils to make more rapid progress in word recognition.

Table XXI is a summary of the analysis of covariance for the Paragraph Meaning subtest. In interpreting the data in this table, the information on randomization which applied to Table XVI should again be borne in mind.

TABLE XXI

ANALYSIS OF COVARIANCE FOR THE STANFORD ACHIEVEMENT TEST PARAGRAPH MEANING SUBTEST GIVEN MAY, 1966

Variable Held Constant	Source of Variation	Sum of Squares	df	Mean Square	F *	Significance Level
Stanford Word Reading - Sept. 1965	Between Groups	25.0374	2	12.5187	1.70	N.S.
	Within Groups	124.9908	17	7.3524		
Stanford Paragraph Meaning - Sept.1965	Between Groups	6.4592	2	3.2296	.57	N.S.
	Within Groups	96.9867	17	5.7051		
Pintner Mental Age - Sept. 1964	Between Groups	16.1076	2	8.0538	.54	N.S.
	Within Groups	252.4109	17	14.8477		
Metropolitan Total-Sept.1964	Between Groups	47.607	2	23.8035	1.18	N.S.
	Within Groups	341.5368	17	20.0904		

* $F_{.95} = 3.59$, $F_{.99} = 6.11$ with 2 and 17 degrees of freedom.

No significant differences in the ability to read and comprehend connected discourse is shown between groups. It can be assumed that at second grade level all three instructional procedures, in spite of their very different approaches to comprehension, serve equally well in teaching the skills measured by this subtest. The aims of the three approaches in regard to comprehension development were contrasted in Chapter III.

Table XXII is a summary of the data on adjusted mean scores for the treatment groups. As shown in the table, there were no significant differences in these adjusted means.

TABLE XXII

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR PARAGRAPH MEANING SUBTEST GIVEN MAY, 1966

Group	N	Mean of Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Covariate Word Reading Sept. 1965					
Linguistic	7	21.46	1.5511	30.81	33.74
Basal Reader	7	24.91	1.6582	33.79	31.35
Modified Ling.	7	23.66	1.5149	31.80	31.31
Total		23.34	1.5525		
Covariate Paragraph Meaning Sept. 1965					
Linguistic	7	20.80	1.2850	30.81	32.85
Basal Reader	7	24.41	1.0555	33.79	31.45
Modified Ling.	7	22.24	1.2012	31.80	32.09
Total		22.49	1.2090		
Covariate Metropolitan Readiness Total Sept. 1964					
Linguistic	7	58.11	.7871	30.81	32.02
Basal Reader	7	63.96	1.0375	33.79	30.22
Modified Ling.	7	56.70	.7806	31.80	34.16
Total		59.59	.8159		
Covariate Pintner M.A. Sept. 1964					
Linguistic	7	78.99	1.4018	30.81	31.61
Basal Reader	7	81.56	1.2900	33.79	31.40
Modified Ling.	7	78.34	1.0863	31.80	33.39
Total		79.62	1.2347		

Differences in adjusted criterion means N.S.

Table XXIII is a summary of the analyses of covariance for the Spelling subtest. In interpreting the data in this table, the information on randomization and Ns which applied to Table XVI should again be kept in mind.

TABLE XXIII

ANALYSIS OF COVARIANCE FOR THE STANFORD ACHIEVEMENT TEST SPELLING SUBTEST GIVEN MAY, 1966

Variable Held Constant	Source of Variation	Sum of Squares	df	Mean Square	F *	Significance Level
Stanford Word Reading-Sept.1965	Between Groups	53.9056	2	26.9528	9.42	.01
	Within Groups	48.6438	17	2.8614		
Stanford Paragraph Meaning-Sept.1965	Between Groups	46.5894	2	23.2947	8.07	.01
	Within Groups	49.0161	17	2.8833		
Pintner Mental Age-Sept.1964	Between Groups	44.3090	2	22.1545	3.97	.05
	Within Groups	94.7699	17	5.5749		
Metropolitan Total-Sept.1964	Between Groups	62.0486	2	31.0243	4.48	.05
	Within Groups	117.7216	17	6.9248		

* F.95 = 3.59, F.99 = 6.11 with 2 and 17 degrees of freedom.

Table XXIII reveals a significant difference between treatment group means that represent the ability to spell frequently used words dictated in a list. This is true when both achievement and readiness and aptitude are held constant.

To determine where the differences were located, the procedure identified in the discussion of Tables XVII through XX was again used. Tables XXIV through XXVII are a summary of the data on the adjusted mean scores for the treatment groups and indicate which adjusted means differ significantly.

TABLE XXIV

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR THE SPELLING SUBTEST GIVEN MAY, 1966 -- COVARIATE WORD MEANING SUBTEST GIVEN SEPTEMBER, 1965

Group	N	Mean of Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	21.46	.7597	14.83	16.19 *
Basal Reader	7	24.91	.8666	13.27	12.13
Modified Ling.	7	23.66	.6285	14.87	14.64 **
Total		23.34	.7245		

$SD_{x.y}$	SE_D	df	Significant t	Significant Diff. Between Adjusted Means
1.691	.9030	17	2.90 at .01 2.11 at .05	2.62 1.91

* Differs significantly from Basal Reader Mean at .01 level.
** Differs significantly from Basal Reader Mean at .05 level.

TABLE XXV

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR THE SPELLING SUBTEST GIVEN MAY, 1966 -- COVARIATE PARAGRAPH MEANING SUBTEST GIVEN SEPTEMBER, 1965

Group	N	Mean of Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	20.80	.5840	14.83	15.77 *
Basal Reader	7	24.41	.5411	13.27	12.20
Modified Ling.	7	22.24	.5331	14.87	15.01 *
Total		22.49	.5563		

$SD_{x.y}$	SE_D	df	Significant t	Significant Difference Between Adjusted Means
1.698	.9067	17	2.90 at .01	2.63

* Differ significantly from Basal Reader Mean at .01 level.

TABLE XXVI

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR THE SPELLING SUBTEST GIVEN MAY, 1966 -- COVARIATE PINTNER MA, SEPTEMBER, 1964

Group	N	Mean of Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	78.99	.5829	14.83	15.18 *
Basal Reader	7	81.56	.5965	13.27	12.21
Modified Ling.	7	78.34	.5033	14.87	15.58 *
Total		79.63	.5486		

$SD_{x.y}$	SE_D	df	Significant t	Significant Difference Between Adjusted Means
2.361	1.2608	17	2.11 at .05	2.66

* Differ significantly from Basal Reader Mean at .05 level.

TABLE XXVII

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR THE SPELLING SUBTEST GIVEN MAY, 1966 -- COVARIATE METROPOLITAN READINESS TOTAL SEPTEMBER, 1964

Group	N	Mean of Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	58.11	.2976	14.83	15.35 **
Basal Reader	7	63.96	.5210	13.27	11.71
Modified Ling.	7	56.70	.3641	14.87	15.90 *
Total		59.59	.3565		

$SD_{x.y}$	SE_D	df	Significant t	Significant Difference Between Adjusted Means
2.631	1.405	17	2.11 at .05 2.90 at .01	2.96 4.07

* Differs significantly from Basal Reader mean at .01 level.
** Differs significantly from Basal Reader mean at .05 level.

Data in the preceding four tables can be summarized as follows. Both the Linguistic and Modified Linguistic approaches to primary reading instruction were superior to the Basal Approach in developing spelling skills as they are measured by the Stanford Achievement Test Spelling Subtest. Comparison of the means for spelling in Table 8 with those for spelling in Tables XX-XXIII show the most rapid rate of growth during grade two for the Linguistic Group.

TABLE XXVIII

SUMMARY OF RATE OF SPELLING GROWTH IN GRADE TWO

Group	Spelling Mean September, 1965	Spelling Mean May, 1966	Amount of Growth
Linguistic	10.79	14.83	4.04
Basal Reader	10.10	13.27	3.17
Modified Linguistic	11.34	14.87	3.53

Mean scores for the three treatment groups were examined to see if any differences in retention of spelling skills had occurred during the summer months between grades one and two. This information is presented in Table XXIX.

TABLE XXIX

CHANGES IN SPELLING MEANS FOR THE THREE TREATMENT GROUPS DURING THE PERIOD OF NO INSTRUCTION BETWEEN GRADES ONE AND TWO

Group	Spelling Mean May, 1965	Spelling Mean September, 1965	Amount of Change
Linguistic	11.03	10.97	- .06
Basal Reader	13.76	10.10	-3.66
Modified Linguistic	11.49	11.34	- .15

The losses shown by the Linguistic and Modified Linguistic Groups are equal to or less than the Standard Error of Measurement for the test used. The loss shown by the Basal Reader Group is in excess of the Standard Error of Measurement and in all probability represents a true loss of skill. The Standard Error of Measurement for this subtest is .10 grade score points.[2] The loss of 3.66 raw score points represents a grade score loss between .3 and .4.

The data related to spelling skill can be interpreted to indicate that achievement in spelling skill by the end of grade 2 was facilitated for this population by reading instruction in both the Linguistic or Modified Linguistic approach.

A summary of the Analysis of Covariance for the Word Study Skills Subtest appears in Table XXX. Again, this analysis was done on means of classroom means.

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[2] Stanford Achievement Test, Directions for Administering, Primary I Battery, Truman Kelley, Richard Madden, Eric F. Gardner and Herbert C. Rudman (New York: Harcourt, Brace & World, Inc., 1964) p. 30.

TABLE XXX

ANALYSIS OF COVARIANCE FOR THE STANFORD ACHIEVEMENT TEST WORD STUDY SKILLS SUBTEST GIVEN MAY, 1966

Variable Held Constant	Source of Variation	Sum of Squares	df	Mean Square	F*	Significance
Stanford Word Reading - Sept.1965	Between Groups	20.2408	2	10.1204	.89	N.S.
	Within Groups	194.3712	17	11.4336		
Stanford Paragraph Meaning - Sept.1965	Between Groups	4.9770	2	2.4885	.23	N.S.
	Within Groups	186.7025	17	10.9825		
Pintner MA-Sept. 1964	Between Groups	1.9284	2	.9642	.44	N.S.
	Within Groups	373.796	17	21.988		
Metropolitan Total - Sept. 1964	Between Groups	7.5834	2	3.7917	.14	N.S.
	Within Groups	465.4158	17	27.3774		

* F.95 = 3.59, F.99 = 6.11 with 2 and 17 degrees of freedom

No F approaches significance in this analysis. It can be assumed that all three experimental treatments can serve equally well in developing the skills measured on this subtest in spite of the very different approaches to developing these skills employed in the three treatments. These approaches were compared in Chapter III.

Table XXXI is a summary of the data on adjusted Word Study Skills means. As indicated in Table XXX, there are no significant differences between any of the means.

TABLE XXXI

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR WORD STUDY SKILLS SUBTEST GIVEN MAY, 1966

Group	N	Mean of Covariate	Beta	Criterion Mean	Adjusted Criterion Mean
		Covariate Word Reading, Sept., 1965			
Linguistic	7	21.46	1.2824	37.17	39.39
Basal Reader	7	24.91	1.8196	39.51	37.67
Modified Ling.	7	23.66	.8079	37.36	36.99
Total		23.34	1.1768		
		Covariate Paragraph Meaning, Sept., 1965			
Linguistic	7	20.80	.9922	37.17	38.71
Basal Reader	7	24.41	1.2041	39.51	37.76
Modified Ling.	7	22.24	.6732	37.36	37.58
Total		22.49	.9100		
		Covariate Metropolitan Readiness Total, Sept., 1964			
Linguistic	7	58.11	.4777	37.17	37.93
Basal Reader	7	63.96	.9734	39.51	37.28
Modified Ling.	7	56.70	.4151	37.36	38.84
Total		59.59	.5124		
		Covariate Pintner MA, Sept., 1964			
Linguistic	7	78.99	1.0135	37.17	37.71
Basal Reader	7	81.56	1.0984	39.51	37.90
Modified Ling.	7	78.34	.5920	37.36	38.43
Total		79.63	.8346		

Differences in adjusted criterion means N.S.

Analysis of Achievement of the Sub-sample. The skills of a randomly selected sub-sample of each treatment group were examined in greater depth by means of individual tests. The following tests were used:

1. The Gilmore Oral Reading Test

   This yielded a score for accuracy, rate of reading and comprehension.
2. Gates Word Pronunciation Test
3. Fry Phonetically Regular Words Oral Reading Test

The sub-sample groups would be assumed to be of equivalent ability by virtue of their random selection. An analysis of variance of the Pintner raw score means for the sub-sample was run as an additional assurance that this was indeed the case. Results of this analysis are presented in the following table.

TABLE XXXII

RAW SCORE MEANS OF THE SECOND GRADE SUB-SAMPLE AND RESULTS OF THE ANALYSIS OF VARIANCE OF THE PINTNER-CUNNINGHAM PRIMARY TEST, FORM A (SEPT., 1964)

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Pintner-Cunningham (Raw Score)	42.09	1.69	38.86	3.50	40.31	4.23	1.66	N.S.

* F.95 = 3.55, with 2 and 18 degrees of freedom.

The nonsignificant F is assurance that the three sub-sample groups were of equivalent aptitude as measured by the Pintner-Cunningham test.

The data for the Analysis of Covariance for the Gilmore Oral Reading Test is summarized in Table XXXIII.

TABLE XXXIII

ANALYSIS OF COVARIANCE OF GILMORE ORAL READING TEST GIVEN MAY, 1966

Criterion	Covariate	Source of Variation	SS	df	MS	F*	Sig.
Gilmore Accuracy	Stan. Word Read. 9-65	Between	.65	2	.32	.95	N.S.
		Within	7.33	17	.43		
	Stan. Para. Mean. 9-65	Between	.29	2	.15	.39	N.S.
		Within	6.27	17	.37		
	Met. Read. Total 9-64	Between	.80	2	.40	.05	N.S.
		Within	13.39	17	.79		
	Pintner MA 9-64	Between	.40	2	.20	.02	N.S.
		Within	12.68	17	.75		
Gilmore Comprehension	Stan. Word Read. 9-65	Between	2.11	2	1.06	3.63	.05
		Within	4.94	17	.29		
	Stan. Para. Mean. 9-65	Between	1.61	2	.81	3.66	.05
		Within	3.73	17	.22		
	Met. Read. Total 9-64	Between	1.28	2	.64	1.36	N.S.
		Within	7.99	17	.47		
	Pintner MA 9-64	Between	.82	2	.41	.88	N.S.
		Within	7.91	17	.46		
Gilmore Rate	Stan. Word Read. 9-65	Between	55.60	2	27.80	.15	N.S.
		Within	3090.90	17	181.82		
	Stan. Para. Mean. 9-65	Between	78.03	2	39.02	.21	N.S.
		Within	3125.61	17	183.86		
	Met. Read. Total 9-64	Between	142.45	2	70.23	.30	N.S.
		Within	3955.18	17	232.65		
	Pintner MA 9-64	Between	132.8	2	66.4	.30	N.S.
		Within	3694.72	17	217.34		

* F.95 = 3.59 with 2 and 17 degrees of freedom.

When interpreting Table XXXII, it should be remembered that the analysis was performed on means of the classroom sub-sample means. One criterion measure in this analysis showed a significant F. Differences at the .05 level were apparent in comprehension when the factor of pre-treatment reading skill was held constant.

TABLE XXXIV

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR THE GILMORE ORAL READING TEST -- COMPREHENSION GIVEN MAY, 1966

Covariate Stanford Word Reading, Sept., 1965

Group	N	Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	21.46	.1440	4.17	4.44 **
Basal Reader	7	24.91	.1084	3.94	3.72
Modified Ling.	7	23.66	.1583	3.81	3.36
Total		23.34	.1444		

$SD_{x.y}$	SE_D	df	Significant t	Significant Difference Between Adjusted Means
.5392	.2879	17	2.11 at .05	.61

** Differs significantly from Basal Reader and Modified Ling. means at .05.

Covariate Stanford Paragraph Meaning, Sept., 1965

Group	N	Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	20.80	.1372	4.17	4.37 **
Basal Reader	7	24.41	.0825	3.94	3.71
Modified Ling.	7	22.24	.1152	3.81	3.84
Total		22.48	.1116		

$SD_{x.y}$	SE_D	df	Significant t	Significant Difference Between Adjusted Means
.4685	.2502	17	2.11 at .05	.53

** Differs significantly from Basal Reader and Modified Ling. means at .05.

Covariate Metropolitan Total Sept., 1964

Group	N	Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	58.11	.0781	4.17	4.27
Basal Reader	7	63.96	.0555	3.94	3.64
Modified Ling.	7	56.70	.0651	3.81	4.01
Total		59.59	.0693		

Covariate Pintner Mental Age, Sept., 1964

Group	N	Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	78.99	.1213	4.17	4.23
Basal Reader	7	81.56	.0733	3.94	3.74
Modified Ling.	7	78.34	.0953	3.81	3.94
Total		79.63	.1002		

Inspection of Table XXXIV will show that the mean of the Linguistic Group was significantly higher at the .05 level of confidence when pre-treatment reading achievement was the covariate than the means of the other two treatment groups. When readiness and intelligence factors were the covariate, the difference in means was not significantly different. However, the means of the Linguistic Group proved to be numerically superior to the other two under these conditions.

Since the Fs were so small in the Analysis of Covariance for Gilmore Accuracy and Rate, only the criterion and adjusted means for this analysis are presented in Table XXXIV.

TABLE XXXV

ANALYSIS OF COVARIANCE MEANS AND ADJUSTED MEANS FOR GILMORE ORAL READING TEST RATE AND ACCURACY, MAY, 1966

Group	Covariate	Accuracy Mean	Adj. Acc. Mean	Rate Mean	Adj. Rate Mean
Linguistic	Stanford Word	4.23	4.51	88.50	91.62
Basal Reader	Reading 9-65	4.49	4.25	91.66	89.06
Modified Ling.		4.11	4.07	93.56	93.04
Linguistic	Stanford Para.	4.23	4.43	88.50	90.61
Basal Reader	Reading 9-65	4.49	4.26	91.66	89.24
Modified Ling.		4.11	4.14	93.56	93.86
Linguistic	Metropolitan	4.23	4.30	88.50	89.24
Basal Reader	Total 9-64	4.49	4.26	91.66	89.48
Modified Ling.		4.11	4.26	93.56	95.00
Linguistic	Pintner	4.23	4.28	88.50	89.13
Basal Reader	Mental Age	4.49	4.33	91.66	89.06
Modified Ling.	9-64	4.11	4.22	93.56	94.81

Differences between means N.S.

No differences of any significance are evident between the means of the three treatment groups on the criteria of rate and accuracy. It can be assumed that the three experimental treatments provided for development of these skills equally well.

Data summarizing the Analysis of Covariance for the Gates Word Pronunciation Test and the Fry Phonetically Regular Words Test is presented in Table XXXVI.

TABLE XXXVI

ANALYSIS OF COVARIANCE FOR GATES WORD PRONUNCIATION AND FRY PHONETICALLY REGULAR WORDS TEST GIVEN MAY, 1966

Criterion	Covariate	Source of Variation	S.S.	df	M.S.	F.*	Sig.
Gates Test	Stan. Word Read. 9-65	Between	44.08	2	22.04	3.09	N.S.
		Within	121.15	17	7.13		
	Stan. Para. Mean 9-65	Between	36.75	2	18.37	2.82	N.S.
		Within	110.70	17	6.51		
	Met. Read. Total 9-64	Between	42.36	2	21.18	1.12	N.S.
		Within	320.22	17	18.84		
	Pintner MA 9-64	Between	28.59	2	14.30	.84	N.S.
		Within	285.95	17	16.82		
Fry Test	Stan. Word Read. 9-65	Between	121.26	2	60.63	3.17	N.S.
		Within	324.22	17	19.07		
	Stan. Para. Mean 9-65	Between	111.85	2	55.92	3.57	N.S.
		Within	266.51	17	15.68		
	Met. Read. Total 9-64	Between	128.65	2	64.32	1.74	N.S.
		Within	627.89	17	36.93		
	Pintner MA 9-64	Between	89.88	2	44.94	1.12	N.S.
		Within	598.86	17	35.23		

*F.95 = 3.59 with 2 and 17 degrees of freedom.

No significant Fs indicating a difference in means of treatment groups on these two criteria appear. It can be noted that several of the F scores approach the .05 significance level. The criterion means and adjusted means from this analysis are presented in Table XXXVII.

TABLE XXXVII

ANALYSIS OF COVARIANCE MEANS AND ADJUSTED MEANS FOR THE GATES WORD PRONUNCIATION TEST AND THE FRY PHONETICALLY REGULAR WORDS GIVEN MAY,1966

Group	Covariate	Gates Mean	Adj. Gates Mean	Fry Mean	Adj. Fry Mean
Linguistic	Stan. Word	25.07	26.79	29.03	31.30
Basal Reader	Read. 9-65	24.53	23.10	27.19	25.29
Modified Ling.		25.60	25.31	29.74	29.36
Linguistic	Stan. Para.	25.07	24.36	29.03	30.66
Basal Reader	Mean. 9-65	24.53	23.82	27.19	25.32
Modified Ling.		25.60	24.89	29.74	29.98
Linguistic	Metropolitan	25.07	25.82	29.03	29.78
Basal Reader	Reading	24.53	22.30	27.19	24.96
Modified Ling.	Total 9-64	25.60	27.07	29.74	31.22
Linguistic	Pintner MA	25.07	25.43	29.03	29.52
Basal Reader	9-64	24.53	23.44	27.19	25.71
Modified Ling.		25.60	26.32	29.74	30.73

Differences between means N.S.

Pupils in the sub-sample submitted a writing sample for analysis. This was to make it possible to assess the child's ability to use words in written expression. The stories were written in response to a standard stimulus. No help was given by the teacher in spelling or sentence structure. The stories were evaluated in first draft form. That is, no corrections had been made in spelling, capitalization or punctuation. The stories were judged on the basis of the following criteria:

1. Number of running words -- an exact count of all words used by the child.
2. Number of different words -- a word that appeared more than once was counted as one word.
3. Words spelled correctly -- all words, regardless of number of times used, were counted if correctly spelled.
4. Polysyllabic words used -- all words of more than one syllable were counted.
5. Mechanics ratio scale -- the per cent of mechanics accuracy for capitalization, punctuation and indentation.

Table XXXVIII is a summary of the means achieved by the three groups on the above criteria.

TABLE XXXVIII

RESULTS OF A ONE WAY ANALYSIS OF VARIANCE OF THE SECOND GRADE WRITING SAMPLE TAKEN MAY, 1966

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Sig. Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Mechanics Ratio (% of Accuracy)	58.61	11.40	57.61	11.52	63.06	15.82	.34	N.S.
Number of Words Spelled Correctly	53.51	13.47	52.14	14.78	57.80	25.10	.18	N.S.
Number of Running Words	62.89	16.23	60.83	18.08	66.57	27.47	.13	N.S.
Number of Different Words	37.33	6.26	27.23	9.66	38.64	13.81	.04	N.S.
Number of Polysyllabic Words	13.34	4.42	13.47	4.14	17.33	8.68	.96	N.S.

*F.95 = 3.55 with 2 and 18 degrees of freedom.

These means were analyzed statistically by analysis of variance. No F approached significance.

The data presented in Table XXIV showed both the Linguistic Group and the Modified Linguistic Group to be superior to the Basal Group on the Stanford Achievement Test Spelling subtest. That test measured the children's ability to spell words in isolation. This statistical superiority was not evident when the children were required to use words in a free composition situation.

An attempt was made to analyze the attitudes of the children toward reading. It is reasonable to assume that children who are learning to read well and who find their reading instruction interesting and exciting will display a favorable attitude toward reading. It is possible that the method of instruction and materials used for instruction could shape the child's attitude toward reading. The instrument used for this purpose was the San Diego Pupil Attitude Inventory. This instrument does not seem to be appropriate for use with children of this age group. It was used in both the first and second grade studies because by joint agreement of the directors of the Cooperative Research Projects, data produced by this instrument was to be collected. The correlation of this inventory and all objective and subjective measures of reading skill was essentially a zero correlation. The means of the three treatment groups on the attitude inventory appear in Table XXXIX. Table XL is a summary of the Pearson Product-Moment Correlations of the inventory with several measures of reading skill.

TABLE XXXIX

RAW SCORE MEANS OF TREATMENT GROUPS AND RESULTS OF THE ANALYSIS OF VARIANCE OF THE SAN DIEGO PUPIL ATTITUDE INVENTORY (MAY, 1966)

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Sig. Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Number of Positive Responses	17.17	1.54	18.43	1.30	18.29	2.43	1.0	N.S.

*F.95 = 3.55

There were no significant differences in the number of positive responses elicited from pupils in the several treatment groups, as shown by the nonsignificant F in Table XXXIX.

TABLE XL

CORRELATIONS OF THE SAN DIEGO PUPIL ATTITUDE INVENTORY GIVEN MAY, 1966 WITH MEASURES OF READING AND RELATED SKILLS AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Objective Measures of Reading Skill	
Stanford Word Meaning	.09
Stanford Paragraph Meaning	.12
Stanford Spelling	.20
Stanford Word Study Skills	.10
Gilmore Accuracy	.05
Gilmore Rate	.07
Gilmore Comprehension	.04
Gates Test	.09
Fry Test	.05
Subjective Measures of Reading Skill	
Number of Books Read Completely	-.04
Number of Books Read Partially	.01
Eagerness to Read	.16
Maturity of Reading Choices	.12

r.13 significant at .01 level of confidence

Table XL indicates that no relationship exists between the San Diego Pupil Attitude Inventory and either objective or subjective measures of reading ability for children in this study.

A more realistic estimate of the child's attitude toward reading may be the amount of independent reading that he actually does. During the month of March a record was kept by each child of all the books he read. The pupil recorded the title, author, and a brief comment about the book and indicated whether he had read all or part of each book. Results of an analysis of variance of this reading are shown in Table XLI.

TABLE XLI

RAW SCORE MEANS OF TREATMENT GROUPS AND RESULTS OF THE ANALYSIS OF VARIANCE OF SUPPLEMENTARY BOOKS READ DURING MARCH, 1966

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Sig. Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Books Read Completely	3.81	2.84	5.34	2.93	9.14	5.28	3.55	.05
Books Read Partially	.53	.37	.54	.27	1.33	1.32	2.23	N.S.

* F.95 = 3.55 with 2 and 18 degrees of freedom.

The children in the Linguistic Group read a significantly greater number of books during the sampling period than did the Basal Reader Group. Other comparisons of means on this variable were not significant.

Comparison of Achievement of Pupils Across Treatment Groups

Ability Level Comparisons. One of the purposes of this study was to determine whether one of the treatment groups might prove superior for either boys or girls at different levels of ability. High ability pupils were defined as those pupils with a Pintner raw score above 44 in September, 1964, when the test was administered. Low ability pupils were defined as those with a raw score of 35 or less on the same test. Pupils whose raw score fell between 35 and 44 were defined as being middle ability pupils.

The means and standard deviations of pupils in the three ability levels according to treatment groups are presented in the following tables. No information is presented on the level of significance of difference between means. The randomization procedure in this study was to randomly assign treatment to classroom group. For this reason randomization on the basis of individual pupils cannot be assumed. However, examination of the means reveals some interesting trends. Table XLII is a comparison of the achievement of high ability boys.

TABLE XLII

MEANS AND STANDARD DEVIATIONS OF HIGH ABILITY BOYS IN THE THREE TREATMENT GROUPS ON ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Stanford Achievement Sub-tests Given May, 1966

	Linguistic Group (N=22)		Basal Reader Group (N=21)		Modified Ling. Group (N=15)	
Variable	Mean	S.D.	Mean	S.D.	Mean	S.D.
Word Meaning	23.6	7.6	24.4	7.1	24.5	8.7
Paragraph Mean.	38.6	13.8	40.7	12.6	40.7	11.1
Spelling	18.2	7.2	16.4	6.2	18.2	7.4
Word Study	44.5	12.5	46.0	9.8	44.4	10.2
Gilmore Oral Reading, Gates, and Fry Tests Given May, 1966						
	(N=7)		(N=8)		(N-4)	
Gilmore Rate	96.9	17.5	102.0	24.8	96.0	8.5
Gilmore Acc.	5.8	2.0	5.4	1.4	4.3	8.5
Gilmore Comp.	5.9	2.2	4.4	1.1	3.8	.8
Gates Test	33.1	5.6	27.4	4.4	27.8	2.8
Fry Test	38.9	10.2	34.8	8.0	36.8	6.4

Examination of Table XLII reveals only minor differences between means for boys in this ability level. Because of the small differences involved, it cannot be assumed that one method is superior for high ability boys.

Table XLIII summarizes comparable data for boys in the middle ability range.

TABLE XLIII

MEANS AND STANDARD DEVIATIONS OF MIDDLE ABILITY BOYS IN THE THREE TREATMENT GROUPS ON ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Stanford Achievement Subtests Given May, 1966

	Linguistic Group (N=22)		Basal Reader Group (N=21)		Modified Ling. Group (N=15)	
Variable	Mean	S.D.	Mean	S.D.	Mean	S.D.
Word Meaning	14.5	8.9	18.2	6.6	21.8	6.9
Paragraph Mean.	22.3	14.6	27.8	11.5	33.6	11.7
Spelling	10.1	6.9	9.8	6.1	13.9	6.5
Word Study	30.9	12.8	34.8	9.3	38.3	10.4
Gilmore Oral Reading, Gates, and Fry Tests Given May, 1966						
	(N=8)		(N=15)		(N=11)	
Gilmore Rate	70.5	20.5	82.8	32.3	99.8	26.2
Gilmore Acc.	4.2	1.9	3.5	1.1	4.1	1.0
Gilmore Comp.	3.9	1.5	3.5	1.1	3.9	1.3
Gates Test	24.9	9.3	20.7	6.2	26.8	8.3
Fry Test	28.5	14.7	19.8	10.9	30.5	10.1

Examination of Table XLIII reveals that the differences in achievement are much more pronounced for boys in this ability range. Table XLIV shows the Stanford raw scores as shown in Table XLIII converted to grade level scores. The difference in achievement in terms of grade level scores is summarized.

TABLE XLIV

COMPARISON OF GRADE LEVEL SCORES OF AVERAGE ABILITY BOYS IN THE THREE TREATMENT GROUPS ON STANFORD ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD *

Variable	Linguistic Grade Score	Basal Reader Grade Score	Modified Ling. Grade Score
Word Meaning	2.6	2.8	3.2
Paragraph Meaning	2.3	2.6	3.0
Spelling	2.6	2.5	3.1
Word Study	2.4	2.7	3.0

	Superiority of Mod. Ling. Over Linguistic in Grade Level Score	Superiority of Mod. Ling. Over Basal Reader Grade Level Score
Word Meaning	.6	.4
Paragraph Meaning	.7	.4
Spelling	.5	.6
Word Study	.6	.3

* Actual Grade Placement at time of testing 2.8.

In Table XLV, data is presented that compares achievement of low ability boys across treatment groups.

TABLE XLV

MEANS AND STANDARD DEVIATIONS OF LOW ABILITY BOYS IN THE THREE TREATMENT GROUPS ON ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

	Stanford Achievement Subtests Given May, 1966					
	Linguistic Group (N=22)		Basal Reader Group (N=7)		Modified Ling. Group (N=15)	
Variable	Mean	S.D.	Mean	S.D.	Mean	S.D.
Word Meaning	14.5	6.5	16.7	7.7	17.5	7.0
Paragraph Mean.	21.5	11.1	24.7	15.1	24.4	8.9
Spelling	9.1	6.2	11.7	9.2	11.7	6.7
Word Study	27.5	9.1	35.9	13.7	30.5	7.5
	Gilmore Oral Reading, Gates, and Fry Tests Given May, 1966					
	(N=8)		(N=1)		(N=6)	
Gilmore Rate	73.5	45.1	90.0	0	91.0	37.1
Gilmore Acc.	2.6	1.7	6.0	0	3.5	.5
Gilmore Comp.	3.5	1.3	4.7	0	2.5	1.1
Gates Test	17.6	9.8	34.0	0	21.2	4.4
Fry Test	19.6	15.1	45.0	0	23.5	6.4

An overall comparison cannot be made in this instance because of the N of 1 in the sub-sample of the Basal Reader Group. The average difference between Grade Level Score Means for the Stanford Achievement variables is .25. The average standard error of measurement on these four subtests is .21. One can only assume that the three approaches are equally effective for boys at this level of ability.

Table XLVI is a comparison of means and standard deviations of high ability girls across treatment groups.

TABLE XLVI

MEANS AND STANDARD DEVIATIONS OF HIGH ABILITY GIRLS IN THE THREE TREATMENT GROUPS ON ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Variable	Linguistic Group (N=33) Mean	S.D.	Basal Reader Group (N=30) Mean	S.D.	Modified Ling. Group (N=24) Mean	S.D.
Word Meaning	24.2	6.6	22.4	5.7	25.6	5.0
Paragraph Mean.	40.2	10.4	39.4	8.8	41.8	7.8
Spelling	19.7	6.9	15.8	7.0	19.7	6.8
Word Study	44.7	10.7	45.0	10.6	45.0	9.1
Gilmore Oral Reading, Gates, and Fry Tests Given May, 1965						
	(N=13)		(N=14)		(N=9)	
Gilmore Rate	97.4	24.3	98.6	18.9	98.0	15.0
Gilmore Acc.	5.2	1.8	5.4	2.0	4.9	.9
Gilmore Comp.	4.5	1.7	4.5	1.4	5.1	2.2
Gates Test	29.5	8.2	27.3	6.8	31.0	3.4
Fry Test	34.8	11.6	32.4	10.2	37.9	3.5

A summary of the relative achievement of girls in the middle range of ability is shown in Table XLVII.

TABLE XLVII

MEANS AND STANDARD DEVIATIONS OF MIDDLE ABILITY GIRLS IN THE THREE TREATMENT GROUPS ON ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Variable	Linguistic Group (N=19) Mean	Linguistic Group (N=19) S.D.	Basal Reader Group (N=19) Mean	Basal Reader Group (N=19) S.D.	Modified Ling. Group (N=21) Mean	Modified Ling. Group (N=21) S.D.
Stanford Achievement Subtests Given May, 1966						
Word Meaning	19.7	6.8	18.4	7.4	20.3	8.3
Paragraph Mean.	31.2	11.4	33.4	10.6	30.7	11.3
Spelling	14.5	6.3	13.6	5.9	15.7	6.5
Word Study	36.7	11.9	38.8	11.7	39.0	10.0
Gilmore Oral Reading, Gates, and Fry Tests Given May, 1966						
	(N=9)		(N=8)		(N=13)	
Gilmore Rate	102.7	42.8	93.8	26.4	90.0	26.0
Gilmore Acc.	3.7	1.0	4.5	1.0	4.0	.8
Gilmore Comp.	3.8	1.1	3.9	1.9	3.9	1.9
Gates Test	25.2	8.5	26.9	5.9	25.7	7.7
Fry Test	29.9	11.5	29.8	12.9	29.1	11.6

The means for all variables are so close in this case that it can be assumed that girls of average ability in this study achieved equally well in all three treatment groups.

Table XLVIII is a summary of means and standard deviations for low ability girls across treatment groups.

TABLE XLVIII

MEANS AND STANDARD DEVIATIONS OF LOW ABILITY GIRLS IN THE THREE TREATMENT GROUPS ON ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Stanford Achievement Subtests Given May, 1966

	Linguistic Group (N=15)		Basal Reader Group (N=6)		Modified Ling. Group (N=19)	
Variable	Mean	S.D.	Mean	S.D.	Mean	S.D.
Word Meaning	16.4	6.5	17.7	3.8	15.2	6.7
Paragraph Mean.	23.0	14.6	27.7	12.0	21.8	12.4
Spelling	12.7	8.8	11.3	6.7	11.3	6.7
Word Study	30.7	10.2	32.5	12.7	29.4	10.2
Gilmore Oral Reading, Gates, and Fry Tests Given May, 1966						
	(N-5)		(N-4)		(N=7)	
Gilmore Rate	81.6	36.6	84.0	45.7	83.1	35.9
Gilmore Acc.	3.5	1.4	3.6	1.0	3.5	1.3
Gilmore Comp.	3.9	1.6	3.5	1.2	2.9	1.4
Gates Test	16.2	11.3	20.8	4.3	18.9	8.7
Fry Test	17.0	15.0	20.0	11.4	19.9	15.0

The differences in achievement means on the Stanford variables are less than or equal to the Standard Error of Measurement for that test so it can only be assumed that performance across treatment groups was equal for girls in this ability range. The differences are similarly small on the other variables. Neither treatment can be interpreted as superior for girls of this sort under the conditions prevailing in this study.

In summary, the three treatments were equally effective for children of three ability levels.

Boys often appear to be at a disadvantage when compared to girls in learning to read. This is particularly true in comparisons of reading accomplishment at primary level. This trend is also evident in the greater number of boys who require corrective or remedial reading treatment. In order to determine whether this same disadvantage for boys would appear under conditions of this study when three widely contrasting approaches to instruction were used, comparisons were made of the mean achievement scores of boys and girls in each of the three treatment groups. Results of this comparison appear in the following tables. Table XLIX is a presentation of this comparative data for pupils of high ability.

TABLE XLIX

COMPARISON OF MEANS FOR HIGH ABILITY BOYS AND GIRLS IN EACH OF THE THREE TREATMENT GROUPS ON ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Stanford Achievement Subtests Given May, 1966

	Linguistic Group		Basal Reader Group		Mod. Linguistic Group	
Variable	Boys N=22 Mean	Girls N=33 Mean	Boys N=21 Mean	Girls N=30 Mean	Boys N=15 Mean	Girls N=24 Mean
Word Meaning	23.6	24.2	24.4	22.4	24.5	25.6
Paragraph Meaning	38.6	40.2	40.7	39.4	40.7	41.8
Spelling	13.2	19.7	16.4	15.8	18.2	19.7
Word Study	44.5	44.7	46.0	45.0	44.4	45.0

Gilmore Oral Reading Test, Gates, and Fry Tests Given May, 1966

	Boys N=7	Girls N=13	Boys N=8	Girls N=14	Boys N=4	Girls N=9
Gilmore Rate	96.9	97.4	102.0	98.6	96.0	98.0
Gilmore Accuracy	5.8	5.2	5.4	5.4	4.3	4.9
Gilmore Comp.	5.9	4.5	4.4	4.5	3.8	5.1
Gates Test	33.1	29.5	27.4	27.3	27.8	31.0
Fry Test	38.9	34.8	34.8	32.4	36.8	39.7

The differences in mean achievement as shown in Table XLIX are very slight. They are so slight that no claim can be made for a given treatment's superiority as a mode of instruction for either sex at this level of ability.

Table L is a summary of comparable data for pupils in the middle range of ability.

TABLE L

COMPARISON OF MEANS FOR MIDDLE ABILITY BOYS AND GIRLS IN EACH OF THE THREE TREATMENT GROUPS ON ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Stanford Achievement Subtests Given May, 1966

	Linguistic Group		Basal Reader Group		Mod. Linguistic Group	
Variable	Boys N=24 Mean	Girls N=19 Mean	Boys N=32 Mean	Girls N=19 Mean	Boys N=33 Mean	Girls N=21 Mean
Word Meaning	14.5	19.7	18.2	18.4	21.8	20.3
Paragraph Meaning	22.3	31.2	27.8	33.4	33.6	30.7
Spelling	10.1	14.5	9.8	13.6	13.9	15.7
Word Study	30.9	36.7	34.8	38.8	38.3	39.0

Gilmore Oral Reading Test, Gates, and Fry Tests Given May, 1966

	Boys N=8	Girls N=9	Boys N=15	Girls N=18	Boys N=11	Girls N=13
Gilmore Rate	70.5	102.7	82.8	93.8	98.8	90.0
Gilmore Accuracy	4.2	3.7	3.5	4.6	4.1	4.0
Gilmore Comp.	3.9	3.8	3.5	3.9	3.9	3.9
Gates Test	24.9	25.2	20.7	26.9	26.8	25.7
Fry Test	28.5	29.9	19.8	29.8	30.5	29.1

Examination of the table above will reveal that on the Stanford variables boys and girls in this ability level are equally successful when the Modified Linguistic Material is used for instruction. In the case of the other two methods, boys are shown to be at a disadvantage in every case. This disadvantage amounts to an average of .5 in terms of grade level score for boys in the Linguistic Group. The disadvantage amounts to .3 in terms of grade level score for the Basal Reader Group. Under the conditions prevailing in this study, it appears that the Modified Linguistic approach tended to minimize the disadvantage in achieving reading skill for average ability boys.

Similar comparisons are made for achievement means of low ability children in Table LI.

TABLE LI

COMPARISON OF MEANS FOR LOW ABILITY BOYS AND GIRLS IN EACH OF THE THREE TREATMENT GROUPS ON ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Stanford Achievement Subtests Given May, 1966

	Linguistic Group		Basal Reader Group		Mod. Linguistic Group	
Variable	Boys N=22 Mean	Girls N=15 Mean	Boys N=7 Mean	Girls N=6 Mean	Boys N=13 Mean	Girls N=19 Mean
Word Meaning	14.5	16.4	16.7	17.7	17.5	15.2
Paragraph Meaning	21.5	23.0	24.7	27.7	24.4	21.8
Spelling	9.1	12.7	11.7	11.3	11.7	11.3
Word Study	27.5	30.7	35.9	32.5	30.5	29.4

Gilmore Oral Reading Test, Gates, and Fry Tests Given May, 1966

	Boys N=8	Girls N=5	Boys N=1	Girls N=4	Boys N=6	Girls N=7
Gilmore Rate	73.5	81.6	90.0	84.0	91.0	83.1
Gilmore Accuracy	2.6	3.5	6.0	3.6	3.5	3.5
Gilmore Comp.	3.5	3.9	4.7	3.5	2.5	2.9
Gates Test	17.6	16.2	34.0	20.8	21.2	18.9
Fry Test	19.6	17.0	45.0	20.0	23.5	19.9

Here again, the differences between means of boys and girls in the three treatment groups are minute. The largest differences, those in the Linguistic Group, average very close to the Standard Error of

Measurement for those subtests. No convincing evidence can be found to indicate that either of the three treatments is superior for either sex at this level of ability.

Limitations of the Study

The Teacher Variable. Examination of the tables of data in this chapter reveals in most cases a very large within groups sum of squares. This can be interpreted as within group variation from sources other than treatment. Since the groups were equated statistically on the variables of readiness, mental ability, chronological age and achievement, this leaves as the major uncontrolled source of error in experimentation of this type the effectiveness of the teacher. In this section, examination will be made of some gross differences in achievement of classroom groups within treatments to demonstrate this point. The achievement of the pupils in two classrooms receiving the same experimental treatment is compared in Table LII.

TABLE LII

COMPARISON OF TWO CLASS GROUPS OF EQUAL ABILITY AND RECEIVING THE SAME EXPERIMENTAL TREATMENT ON STANFORD ACHIEVEMENT SUBTEST SCORES AT THE END OF THE SECOND GRADE, MAY 1966

Classroom A MA* 44.64 Readiness ** 72				Classroom B MA * 43.41 Readiness * 65			
Stanford Variable	Mean	S.D.	Grade Score	Stanford Variable	Mean	S.D.	Grade Score
Word Meaning	21.20	7.22	3.1	Word Meaning	25.94	6.19	3.7
Par. Meaning	35.80	11.86	3.1	Par. Meaning	44.47	7.07	4.1
Spelling	16.60	6.10	3.4	Spelling	19.47	6.25	3.6
Word Study Sk.	36.32	9.83	2.8	Word Study Sk.	47.41	8.38	4.2
Average Achievement			3.1	Average Achievement			3.9

*Pintner Raw Score, Sept., 1964

* Metropolitan Total Score, Sept., 1964

Examination of Table LII reveals that the two classrooms were approximately equal in average mental ability and readiness at the beginning of grade 1. Classroom B was slightly inferior to Classroom A on these variables. When a comparison of achievement is made, Classroom B is superior on every criterion. The achievement of this group exceeds that of Classroom A by the following amounts:

Word Meaning	.6 grade
Paragraph Meaning	1.0 grade
Spelling	.2 grade
Word Study Skills	1.4 grade

The differences in Word Study Skills and Paragraph Meaning are particularly striking since they represent the two most important skills to be acquired by the child at primary level. The former represents his ability to use a variety of skills for independent analysis and recognition of unfamiliar words. The latter represents his ability to utilize these skills in a functional reading situation.

The inferior performance of Classroom A in comparison to Classroom B cannot be attributed to substandard school environment in terms of physical plant. This classroom is located in a new modern building that is well equipped with an abundance of up to date instructional materials and equipment. Materially it is superior to the school plant occupied by Classroom B. The critical factor that made the difference was the contrasting professional competencies of the two teachers. This contrast was outstandingly evident to the member of the university research staff who visited the classrooms approximately once a week during the instructional period.

The achievement of pupils in two more classrooms within this same treatment group is contrasted in Table LIII. It can be noted that these two groups have lower potential as measured on pre-experiment tests given at the beginning of grade 1. The average mental ability and readiness as measured by these tests is equal for the two class groups.

TABLE LIII

COMPARISON OF TWO CLASS GROUPS OF EQUAL ABILITY AND RECEIVING THE SAME EXPERIMENTAL TREATMENT ON STANFORD ACHIEVEMENT SUBTEST SCORES AT THE END OF THE SECOND GRADE, MAY 1966

Classroom C				Classroom D			
MA*34.90		Readiness** 50		MA* 34.43		Readiness* 50	
Stanford Variable	Mean	S.D.	Grade Score	Stanford Variable	Mean	S.D.	Grade Score
Word Meaning	21.63	7.05	3.2	Word Meaning	11.95	7.02	2.1
Para. Meaning	29.82	12.64	2.8	Para. Meaning	16.87	12.37	2.0
Spelling	17.00	8.21	3.4	Spelling	7.43	5.59	2.3
Word Study Sk.	38.00	16.11	3.0	Word Study Sk.	23.17	6.42	1.7
Average Achievement			3.1	Average Achievement			2.0
* Pintner Raw Score, Sept., 1964				* Metropolitan Total Score, Sept.,1964			

Examination of Table LIII, which presents achievement data for two classrooms equated on ability and readiness factors, shows the following differences in achievement.

Word Meaning	1.1 grade
Paragraph Meaning	.8 grade
Spelling	1.1 grade
Word Study Skills	1.3 grade

These differences in achievement can only be interpreted as gross. In Classroom C the average achievement on these four important skills is at or above grade placement at time of testing in every instance. (Grade placement at time of this testing in May is 2.8) The other group of children averages .8 year retardation in reading skills with a retardation of 1.1 year in the weakest skill.

Once again, this difference cannot be attributed to a substandard material school environment. The physical plant of the school of Classroom D is modern and well equipped and located in a suburban setting. Classroom C is located in an older school in an urban environment. It does not compare favorably with the former school in attractiveness or amount of modern instructional aids. This school has a large proportion of pupils from a low socio-economic background.

Both teachers in this comparison are women with equal experience teaching primary grades. Each has had in excess of ten years of teaching experience at this level and both are of approximately the same age. The two teachers are comparable on all data collected. The two differ widely in their understanding of children, the reading skills to be mastered at primary level, and in their flexibility and ingenuity in meeting the unique needs of individual pupils. In short, pronounced differences are to be observed in professional competency.

This problem of within group variability can be demonstrated in another way. The range of scores on the four Stanford Variables can be compared within a given treatment group. This is done in Table LIV. The treatment group is not the one analyzed above.

TABLE LIV

RANGE OF ACHIEVEMENT ON FOUR STANFORD SUBTESTS WITHIN ONE TREATMENT GROUP AT THE END OF GRADE TWO, MAY 1966

	Word Meaning	Paragraph Meaning	Spelling	Word Study Skills
High Mean Score*	3.5	3.4	3.3	4.2
Low Mean Score	2.5	2.5	2.6	2.4
Difference Between High and Low	1.0	.9	.7	1.8

*Scores shown as Grade Level Scores and represent classroom means.

Data in Table LIV summarizes achievement of six classrooms within a single treatment group. These six classrooms had average mean ability scores that fell within the middle ability range as defined on page 89. One classroom from this treatment group does not enter into the comparison since the mean ability of that group fell in the high ability range as previously defined.

It should be noted that the largest spread in achievement is a spread of almost two school years in Word Study Skills. There is a difference of a full year in achievement between the highest and lowest classroom in the ability to read and interpret words and almost a full year in the ability to read connected discourse.

This data is one further emphasis on the importance of teacher competency in developing primary reading skills. In equated groups such as are described in Tables LII and LIII differences in achievement of pupils may represent at least four weaknesses in the professional competencies of teachers. These are: (1) Lack of knowledge of skills to be developed at primary level and their sequence of development. (2) Lack of ability to develop the skills that are needed. (3) Inability to determine the degree to which skills have been mastered. (4) Lack of sensibility to the learning needs of individual children and the flexibility necessary to meet these individual needs.

In summary, a major limitation of a study of this type is the uncontrolled variable of teacher competency. This variable appears to account for greater differences in pupil achievement than the treatment variable making it very difficult to assess true treatment effect. Under these conditions, difference in achievement due to treatment effect must be quite large to show a significant difference.

Correlations Between Pre- and Post-Experiment Measures

Pearson product-moment correlations were computed for various pre- and post-experiment measures. The Correlation Matrix is presented in Table LV. Correlations of .13 or above differ significantly from zero at the .01 level of confidence.

TABLE LV -- CORRELATION MATRIX *

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Chronological Age 9/64	1		21	09	07	14	12	06	24	03	27	06	09	14	21	10	15	01	-02	01	-04	-04	-02	-01	-03	01	00	05	-04	-02	00
Mental Age 9/64	2			51	43	48	48	45	58	43	41	38	52	59	51	49	69	52	53	51	43	54	51	53	46	43	51	47	54	46	50
Murphy-Durrell Phonemes	3				51	53	55	40	36	26	43	36	38	54	39	54	63	55	54	54	50	61	57	56	55	49	62	51	54	47	56
Murphy-Durrell Capitals	4					80	95	45	33	19	35	34	40	60	37	78	70	49	52	45	44	54	49	50	36	48	46	45	49	47	45
Murphy-Durrell Lower Case	5						92	48	32	17	30	35	38	61	39	79	70	56	56	45	48	58	52	55	40	51	50	48	51	48	48
Murphy-Durrell Total	6							49	34	20	36	36	41	63	40	83	74	56	58	48	50	60	55	56	40	53	52	50	54	52	50
Murphy-Durrell Lrng. Rate	7								30	18	25	23	33	45	31	52	51	46	50	32	36	42	38	43	30	35	35	42	41	40	36
Thurstone Pattern Copying	8									23	28	23	38	40	57	32	52	34	32	32	29	36	30	34	28	27	29	28	31	28	33
Thurstone Ident. Forms	9										28	20	25	30	28	20	35	30	28	26	22	27	27	29	26	23	26	24	29	23	29
Metropolitan Word Meaning	10											42	33	44	31	36	65	42	43	59	38	46	42	43	50	30	43	44	48	32	38
Metropolitan Listening	11												32	42	33	34	61	31	36	39	29	39	34	35	32	27	36	36	40	27	31
Metropolitan Matching	12													49	37	39	68	63	45	43	34	47	38	43	32	33	39	39	45	34	37
Metropolitan Numbers	13														47	62	85	54	57	53	49	57	52	55	47	48	54	49	54	44	51
Metropolitan Copying	14															37	65	27	33	32	19	35	29	32	33	25	31	24	31	25	30
Metropolitan Alphabet	15																76	54	58	44	50	58	55	57	41	56	52	50	31	52	50
Metropolitan Total	16																	61	66	63	53	68	60	63	54	54	61	58	65	52	58
Stanford Word Rdg. Gr. 1	17																		81	52	75	79	83	80	54	76	79	76	74	76	70
Stanford Para.Rdg. Gr. 1	18																			56	77	79	80	84	55	71	70	71	74	70	67
Stanford Vocabulary Gr. 1	19																				53	61	53	53	68	40	54	55	60	40	50
Stanford Spelling Gr. 1	20																					77	79	78	50	77	71	70	72	71	66
Stanford Word Study Gr. 1	21																						80	80	55	73	79	74	74	69	70
Stanford Word Rdg. Gr. 2-1	22																							89	58	81	83	76	74	76	70
Stanford Para.Rdg. Gr. 2-1	23																								55	79	78	71	74	70	67
Stanford Vocab. Gr. 2-1	24																									46	61	55	60	40	50
Stanford Spelling Gr. 2-1	25																										77	70	72	71	66
Stanford Word Stdy.Gr. 2-1	26																											74	74	69	70
Stanford Word Mng. Gr. 2-2	27																												87	81	82
Stanford Para.Mng. Gr. 2-2	28																													79	75
Stanford Spelling Gr. 2-2	29																														75
Stanford Word Stdy.Gr. 2-2	30																														

* Based on individual observations. Decimal points omitted to save space.
P ≑ .01 when r = .13 or higher.

Pearson Product-Moment Correlations were also computed to determine whether a relationship existed between certain other factors operating within the classroom and objective and subjective measures of reading skill. Tables LVI through LIX contain this data.

TABLE LVI

CORRELATION OF PUPIL ATTENDANCE IN GRADE TWO WITH MEASURES OF READING AND RELATED SKILLS AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Objective Measures of Reading Skill		Subjective Measures of Reading Skill	
Stanford Word Meaning	-.10	Books Read Completely	-.20
Stanford Paragraph Meaning	-.06	Books Read Partly	-.12
Stanford Spelling	-.17	Eagerness to Read	-.08
Stanford Word Study Skills	-.08	Maturity of Reading Choices	-.04
Gilmore Rate	-.03		
Gilmore Accuracy	-.07		
Gilmore Comprehension	.04		
Gates Test	-.11		
Fry Test	-.14		

r = .13 significant at .01 level

The correlations between pupil attendance and reading achievement were either the equivalent of a zero correlation or so small as to be of no practical importance.

TABLE LVII

CORRELATIONS OF TEACHER ATTENDANCE DURING THE INSTRUCTIONAL PERIOD WITH MEASURES OF READING AND READING RELATED SKILLS AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Objective Measures of Reading Skill	
Stanford Word Meaning	-.07
Stanford Paragraph Meaning	-.11
Spelling	-.10
Word Study Skills	-.12
Gilmore Accuracy	-.16
Gilmore Rate	.03
Gilmore Comprehension	.04
Gates Test	.05
Fry Test	.05
Subjective Measures of Reading Skill	
Books Read Completely	-.05
Books Read Partly	.01
Eagerness to Read	-.04
Maturity of Reading Choices	-.13

r = .13 significant at .01 level

Correlations between teacher attendance and pupil achievement were essentially zero.

Table LVIII contains correlational data related to teacher rating and pupil achievement. Interpretation of the table should be made in terms of the discussion on methods of rating discussed above and in terms of data presented above on the topic of within treatment variability.

TABLE LVIII

CORRELATIONS OF TEACHER RATING WITH MEASURES OF READING AND RELATED SKILLS AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Objective Measures of Reading Skill	
Stanford Word Meaning	.29
Stanford Paragraph Meaning	.29
Stanford Spelling	.28
Stanford Word Study Skills	.31
Gilmore Accuracy	.35
Gilmore Rate	-.02
Gilmore Comprehension	.25
Gates Test	.30
Fry Test	.31
Subjective Measures of Reading Skill	
Books Read Completely	.18
Books Read Partly	-.07
Eagerness to Read	.48
Maturity of Reading Choices	.59

r = .13 significant at .01 level of confidence

These very low correlations can only be interpreted as being indicative of the insensitivity of a blanket numerical rating technique as an assessment of teacher competency.

TABLE LIX

CORRELATIONS OF READING INSTRUCTIONAL TIME, SUPPORTING TIME, AND TOTAL READING TIME WITH MEASURES OF READING AND RELATED SKILLS AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Objective Measures of Reading		Subjective Measures of Reading	
Stanford Word Meaning	.12	Books Read Completely	-.14
Stanford Paragraph Meaning	.15	Books Read Partly	-.14
Stanford Spelling	.09	Eagerness to Read	-.03
Stanford Word Study Skills	.11	Maturity of Reading Choices	-.08
Gilmore Accuracy	.01		
Gilmore Rate	.24		
Gilmore Comprehension	-.05		
Gates Test	.11		
Fry Test	.12		

Supporting Time for Reading

Objective Measures of Reading		Subjective Measures of Reading	
Stanford Word Meaning	-.10	Books Read Completely	.18
Stanford Paragraph Meaning	-.13	Books Read Partly	.19
Stanford Spelling	-.01	Eagerness to Read	-.08
Stanford Word Study Skills	-.08	Maturity of Reading Choices	-.06
Gilmore Accuracy	-.12		
Gilmore Rate	-.12		
Gilmore Comprehension	-.16		
Gates Test	-.12		
Fry Test	-.11		

Total Time for Reading

Objective Measures of Reading		Subjective Measuresof Reading	
Stanford Word Meaning	-.03	Books Read Completely	.10
Stanford Paragraph Meaning	-.04	Books Read Partly	.12
Stanford Spelling	.05	Eagerness to Read	-.10
Stanford Word Study Skills	-.02	Maturity of Reading Choices	-.11
Gilmore Accuracy	-.11		
Gilmore Rate	.02		
Gilmore Comprehension	-.19		
Gates Test	-.06		
Fry Test	-.04		

r = .13 significant at .01 level

The low correlations presented in Table LIX should not be interpreted to mean that the amount of time devoted to primary reading instruction is immaterial. Rather it reflects the fact that only minor differences in instructional time existed between treatment groups in this study. This study was not designed to make a valid comparison of the time variable. The table indicates that the minor uncontrollable differences in instructional time between treatment groups could not have distorted measurement of treatment to any important degree.

CHAPTER V -- RESULTS, CONCLUSIONS, AND IMPLICATIONS

Introduction

The purpose of this study was to investigate possible differential effects of three contrasting approaches to primary reading instruction on the achievement of pupils at the end of grade 2. The pupils who were studied at second grade level during the 1965-66 school year had all participated in the similar study of first grade reading achievement the previous year. All remained in the same instructional treatment group throughout the two year period.

Achievement of the three treatment groups was evaluated in the areas of word and paragraph reading, comprehension, reading accuracy and rate of reading. Skills in the supporting area of word analysis were evaluated. The reading related skills of spelling and written composition were studied. Comparison among treatment groups was made on the amount of free reading done by the pupils and their attitudes toward reading.

Comparisons on the above skills were made for the total treatment groups. In addition, performance on these skills was compared across treatment groups for subgroups formed on the basis of ability level and sex.

Twenty-one second grade classrooms of children in three central New York school districts were the subjects in the study. At the beginning of first grade each class had been randomly selected to receive instruction using one of the following media:

1. a basal reader series
2. a modified linguistic (analytic phonic) program
3. a linguistic series

Pre-treatment reading readiness and intelligence testing was conducted in September, 1964 before first grade instruction was begun. In September, 1965 achievement tests were given to determine the pre-second grade skills status of the population. Post-treatment achievement testing was carried out at the close of the 140 day second grade instructional period in May, 1966. The results of these tests and other information is summarized below.

Results

1. The treatment groups did not differ significantly in intelligence as measured on a group test at beginning first grade.
2. Analysis of 18 reading readiness subscores revealed no significant differences between treatment groups except for one subscore. A significant difference in Auditory Discrimination-Rhyming Words was found to favor the Basal Reader Group.
3. No significant differences were found in reading or related skills achievement level of the three treatment groups at the beginning of the second grade instructional period.
4. No significant differences between treatment groups were found in pre-first grade school attendance.

Examination of pre-experimental data revealed that no significant differences existed between groups at the beginning of the second grade instructional period.

The post-experiment measure of achievement administered to all pupils was the Stanford Achievement Test Primary II Battery, Form W. In addition, The Gilmore Oral Reading Test, The Gates Word Pronunciation Test, The Fry Phonetically Regular Words Oral Reading Test, and The San Diego Pupil Attitude Inventory were administered to a randomly selected subsample of 50 children from each treatment group. Members of this subsample each prepared a sample of written composition for analysis.

An analysis of Covariance of post-treatment test results revealed the following:

1. Both the Linguistic Group and the Modified Linguistic Group means were significantly superior to the mean of the Basal Reader Group on the Stanford Word Meaning Subtest when the factor of pre-second grade treatment reading skill was held constant. The means of the Linguistic and Modified Linguistic groups were not significantly different.
2. Differences between the three treatment groups in Paragraph Meaning of the Stanford Test were non-significant.
3. The means of the Linguistic and Modified Linguistic Groups were both significantly above the mean of the Basal Reader Group in spelling on the Stanford Test when the factors of pre-second grade treatment reading skills, readiness and intelligence were held constant. The means of the Linguistic and Modified Linguistic Groups did not differ significantly.

4. No significant differences in Stanford Word Study Skills were found between the three groups.
5. The mean of the Linguistic Group was significantly superior to the means of the other two groups on comprehension as measured by the Gilmore Oral Reading Test when the factor of pre-second grade treatmentreading skill was held constant. The means of the Modified Linguistic and Basal Reader Groups did not differ significantly from each other on this variable.
6. No significant differences between means of the three treatment groups were found either in reading rate or accuracy as measured by the Gilmore Oral Reading Test.
7. There were no significant differences found between the groups in ability to read phonetically regular words presented in the Fry list.
8. The groups did not differ significantly in ability to read the Gates Word Pronunciation Test at the end of grade 2.
9. No significant differences were found when analysis was made of the written composition sample in number of words spelled correctly, number of running words, number of different words used, number of polysyllabic words used or percent of accuracy.
10. The treatment groups did not differ significantly in attitudes toward reading that could be measured with the San Diego Pupil Attitude Inventory.

11. The Linguistic Group read a significantly greater number of books as independent reading during the sampling period when this count was kept than did either of the other two treatment groups. The Modified Linguistic and Basal Groups did not differ significantly from each other on this variable.
12. The three treatments appeared to be equally successful for instructing boys in the high and low ability ranges.
13. All mean grade level scores on the four Stanford Achievement variables of average ability boys who were instructed in the Modified Linguistic materials were above actual grade placement at time of final testing. Average ability boys instructed in the basal reader materials achieved a mean score just at grade placement on one variable -- word meaning. the other three means were below actual grade placement. Average ability boys instructed in the Linguistic materials had no mean achievement score at or above actual grade placement on the Stanford Achievement variables.
14. The three treatments appeared to be equally effective for instruction of girls at all three levels of ability.

A comparison was made of the relative achievement of boys and girls in subgroups based on ability level to determine whether either of the treatments produced higher achievement scores for a given subgroup than did another. A summary of the findings based on the Stanford Achievement variables follows:

1. At the high ability level boys and girls showed no differences in achievement when all children of this ability level

were considered.

2. Boys and girls at the high ability level achieved equally well in each of the treatment groups.
3. All means on the Stanford Subtests were above actual grade placement norms at time of testing for both boys and girls in this high ability group regardless of treatment.
4. At middle ability level girls achieved higher than boys when all children in the experiment were considered.
5. Average ability girls achieved equally well in each of the three treatment groups. All means for girls of this ability were at or above actual grade placement norms at time of testing.
6. There were no differences in achievement between boys and girls of average ability who were instructed in the Modified Linguistic materials. Both boys and girls achieved above actual grade placement norms in this group.
7. Average ability boys in the Linguistic and Basal Reader Groups did not achieve at as high a level as girls in the same treatment groups. In both treatment groups achievement means for boys on the Stanford variables were below actual grade placement at time of testing.
8. At low ability level boys and girls achieved equally well when all children in the experiment at this ability level were considered.
9. There were no differences in achievement between boys and girls of low ability who were instructed in the Basal Reader

materials.

10. Low ability boys who were instructed in the Modified Linguistic materials achieved slightly above the level of girls in this group on the four Stanford variables.
11. Low ability boys who received instruction in the Linguistic materials achieved slightly below the level of girls in this group.
12. The average Stanford Achievement means for low ability boys and girls were below the actual grade placement at time of testing.

Conclusions

All three approaches to primary instruction that were studied proved to be effective for reading instruction at second grade level. Although some significant differences were noted in some of the subskills or related skills of the total reading process as they were measured in this study, none of the approaches was demonstrated to be superior in all aspects of reading.

When average achievement scores are considered each of the three groups was shown to be reading at an acceptable level at the end of grade 2.

The largest differences in achievement that were observed in this study were differences in classroom means within treatment groups. This was true even when the classroom groups were of similar home background and level of ability.

Implications for Further Study

1. The wide variation in achievement within treatment groups in this study points to the factor of teacher competency as being a more significant factor in pupil success at this level than materials or method. A searching study of teacher and pupil behaviors that lead to success in reading is needed.
2. The fact that all three groups achieved equally well on comprehension as measured on the Stanford Paragraph meaning subtest indicates that further study of the role of teaching comprehension skills at primary level is needed. Two of the groups had received sequential instruction in development of comprehension skills. In the Linguistic Group this aspect of reading was deliberately de-emphasized as part of the rationale of the method. Systematic controlled study should be carried out to determine whether this apparently equal development of comprehension was due to contaminating influences in this study, or whether it actually represents a developmental trend in young children. Study of this matter would help to determine where the major emphasis of beginning reading instruction should be: on word recognition, or on a combination of recognition and meaning skills. The fact that the Linguistic Group Comprehension mean on the Gilmore was superior to the means of the other two groups emphasizes the need for close study of this matter.

3. Although the average achievement of the sample population in this study was satisfactory in all treatments there were children in all treatments and at all levels of ability who did not make satisfactory progress. These children should be studied to determine if there are specific reading weaknesses that occur more commonly under one treatment than another. These children should be studied further to determine whether some unique learning style of the individual may have contributed to his failure under one approach and whether his likelihood for success might have been greater using a different method. Detailed study of these low achievers could offer insight into more refined ways of predicting the young child's success in reading and ways of more closely fitting beginning instruction in reading to the needs of the individual learner.

ADDENDUM

The Results, Conclusions and Implications of Testing Pupils During the Third Grade

The first section of this cooperative research project reports the findings of a study of reading instruction at second grade level. This study was a continuation of a project sponsored by the U. S. Office of Education which began with a study of first grade children during the school year of 1964-65. Both of these studies were attempts to determine the effectiveness of three methods of beginning reading instruction.

A modified extension of this research was extended to the third grade. Again the research was under the aegis of the U. S. Office of Education, however, full financial support was not available. As a result, basic changes in research design were necessary.

Before considering the grade three study, it would seem important to refer briefly to the purposes of the previous research and the results which gave direction toward this additional investigation. Two years of study were directed to determining the effectiveness of three approaches to beginning reading instruction, namely, a basal reader program, a linguistic method and a modified linguistic technique. At the end of two years, it was reported that all three approaches were equally effective in teaching most children to read. However, in each treatment group there were children who did not reach an adequate level of reading achievement. It is toward this group of disabled readers that the third grade study is directed. An examination is made of the group and individual characteristics of these children. In addition, a survey of the schools was made to determine what effort was being directed toward meeting the needs of the disabled readers.

The Population: Of the 476 children participating in the original study, only 376 remained at the beginning of grade two. These remaining children were retained in the same twenty-one classrooms. Each treatment was administered in seven classrooms.

In September of 1966, at the beginning of grade three, a total of 324 children of the original population was available for study. It is interesting to note that several schools retained seventy-five percent of the original group while one school had only two pupils left out of twenty-five.

During the third year of the study, the children were no longer retained in experimental classrooms but were distributed throughout the school in regular classes at grade level. Also the schools which had pursued the linguistic and modified linguistic approaches adopted the more traditional basal reader program for the original experimental population. Phasing out of experimental approaches was achieved gradually in some schools: in others treatment was ended abruptly. Consequently, the intention of continuing research as it had been initially planned in 1964 had to be abandoned. While this study is directly concerned with disabled readers in a regular classroom situation, these children cannot be considered apart from the treatment groups in which they were placed initially. As a result, much of the data presented is tabulated with reference to the treatment groups that the children were assigned to during the first two years of the study.

Although the primary purpose of the study in the third grade was to learn more about the disabled readers, descriptive information about the whole group was sought. It was known, for example, that 52 children had moved out of the study population at the end of grade two. This change could alter the achievement profile of the group. In addition, a period of approximately three months summer vacation intervened during which various learning experiences occurred which could also affect the achievement.

In view of these two factors, the results of the Stanford Achievement Test given in May, 1966, at the end of grade two, and the results obtained in October, 1966, at the beginning of grade three, were compared to determine if the achievement profile had changed significantly. The means of the subtest, Word Meaning, were compared to ascertain the equivalence of the groups on this variable.

Comparisons were made in two ways. First, all children, regardless of previous treatment, were compared on the Word Meaning variable. Next, comparisons were made according to the treatment group to which children had been assigned in grades one and two.

A "t" test for groups of unequal size was used to ascertain if there was a significant statistical difference. When the two inclusive populations were compared, there was no significant difference between them. Table I indicates the results of the treatment group comparisons on the subtest, Word Meaning.

TABLE I

COMPARISON OF RAW SCORE MEANS, VARIANCE AND t VALUES OF THE TOTAL POPULATION ON STANFORD ACHIEVEMENT SUBTEST, WORD MEANING: END OF SECOND GRADE AND BEGINNING OF THIRD GRADE

Treatment Groups	N	df	Raw Score Means	Variance	t
Basal Reader: May, 1966	118		20.43	52.547	2.012 (NS)
Basal Reader: Oct., 1966	100		22.30	48.210	
Linguistic: May, 1966	131		19.60	65.116	1.062 (NS)
Linguistic: Oct., 1966	121		20.61	57.395	
Modified Linguistic: May, 1966	127		20.56	58.879	2.492 *
Modified Linguistic: Oct., 1966	103		22.84	39.439	

* Significant at the .01 level of confidence.

Inspection of the means for each pair of comparisons in Table I above reveals slight differences. The difference between the variances for each treatment group is not marked for the Basal Reader or the Linguistic Reader groups. A difference that is statistically significant, however, is noted for the Modified Linguistic group, suggesting that greater changes had taken place within this segment of the population than either of the others.

While the above description of the total group at the beginning of grade three indicated that it closely resembled the total group at the end of grade two, the resemblance stopped at this point. Controls of the study were gone, and reading instruction varied greatly from class to class throughout the third grade. It was felt, therefore, that little could be reported about achievement in the third grade that would be meaningful. On the other hand, acknowledgment is made that the effects of first and second grade instruction in reading are important to reading success in the third grade. But, the loss of study controls cited above severely limit drawing conclusions and implications about the effect of the treatment used in the earlier years.

For this reason third grade achievement in reading is reported below without attempting to draw generalizations about the nature of instruction. It is intended as descriptive of the progress children made during the third grade. Mean gains are reported by treatment groups on the reading subtests results of the Stanford Achievement Test, Primary II Battery Form X, which was administered in October, 1966, and Primary II Battery, Form Y, which was administered in May, 1967. Tables II to V compare the gains made by the three treatment groups from October to May on the subtests, Word Meaning, Paragraph Meaning, Spelling and Word Study Skills.

TABLE II

MEAN RAW SCORE AND GRADE SCORE GAINS ON SUBTEST WORD MEANING OF THE STANFORD ACHIEVEMENT TEST BY TREATMENT GROUPS: OCTOBER, 1966 AND MAY, 1967

Treatment Groups	Raw Score Means	Grade Score Means	Raw Score Mean Gain	Grade Score Mean Gain
Basal Reader (Oct.)	22.30	3.3	4.94	.4
Basal Reader (May)	27.34	3.7		
Linguistic (Oct.)	20.61	3.1	4.34	.5
Linguistic (May)	24.95	3.6		
Modified Linguistic (Oct.)	22.84	3.5	4.18	.2
Modified Linguistic (May)	27.02	3.7		

TABLE III

MEAN RAW SCORE AND GRADE SCORE GAINS ON SUBTEST PARAGRAPH MEANING OF THE STANFORD ACHIEVEMENT TEST BY TREATMENT GROUPS: OCTOBER, 1966 AND MAY, 1967

Treatment Groups	Raw Score Means	Grade Score Means	Raw Score Mean Gain	Grade Score Mean Gain
Basal Reader (Oct.)	36.17	3.1	6.82	.6
Basal Reader (May)	43.09	3.7		
Linguistic (Oct.)	32.71	2.9	7.50	.5
Linguistic (May)	40.21	3.4		
Modified Linguistic (Oct.)	36.87	3.1	7.64	.8
Modified Linguistic (May)	44.51	3.9		

TABLE IV

MEAN RAW SCORE AND GRADE SCORE GAINS ON SUBTEST SPELLING OF THE STANFORD ACHIEVEMENT TEST BY TREATMENT GROUPS: OCTOBER, 1966 AND MAY, 1967

Treatment Groups	Raw Score Means	Grade Score Means	Raw Score Mean Gain	Grade Score Mean Gain
Basal Reader (Oct.)	15.20	3.2	6.26	.4
Basal Reader (May)	21.46	3.6		
Linguistic (Oct.)	15.13	3.2	4.93	.3
Linguistic (May)	20.06	3.5		
Modified Linguistic (Oct.)	17.31	3.4	5.06	.3
Modified Linguistic (May)	22.37	3.7		

TABLE V

MEAN RAW SCORE AND GRADE SCORE GAINS ON SUBTEST WORD STUDY SKILLS OF THE STANFORD ACHIEVEMENT TEST BY TREATMENT GROUPS: OCTOBER, 1966 AND MAY, 1967

Treatment Groups	Raw Score Means	Grade Score Means	Raw Score Mean Gain	Grade Score Mean Gain
Basal Reader (Oct.)	40.91	3.4	6.25	.8
Basal Reader (May)	47.16	4.2		
Linguistic (Oct.)	34.21	2.8	6.71	.6
Linguistic (May)	40.92	3.4		
Modified Linguistic (Oct.)	37.25	3.0	7.43	.9
Modified Linguistic (May)	44.68	3.9		

An examination of Tables II to V indicates that treatment groups made greater gains in Word Study Skills and Paragraph Meaning than they did in Word Meaning and Spelling. Over an eight-month period the gains in Word Study Skills and Paragraph Meaning approximate expectation for all groups.

Identification of Disabled Readers

During the first three weeks of October 1966, the Stanford Achievement Test, Primary Battery II, Form X, was administered to all the children in the population. A team of examiners from the Reading and Language Arts Center of Syracuse University administered the tests. At the time of the testing, the grade placement of the third grade population was estimated to be 3.2 according to Stanford Achievement Test scores. A disabled reader was defined as one who attained a score of 2.7 or less. The pupil's score was obtained by averaging scores obtained on the Stanford Achievement Test subtests of Word Meaning, Paragraph Meaning and Word Study Skills.

Using the criterion mentioned above, 106 pupils from the total of 324 were selected for further study. Table VI indicates the number of disabled readers according to sex, the treatment which they had received during the first two years of their schooling, and the distribution of disabled readers throughout 18 schools.

TABLE VI

THE NUMBER OF DISABLED READERS IDENTIFIED BY SEX, TREATMENT AND DISTRIBUTION THROUGHOUT 18 SCHOOLS OCTOBER, 1966

Approach					
Basal		Linguistic		Modified Linguistic	
Boys	Girls	Boys	Girls	Boys	Girls
5	3	2	3	4	2
2	2	0	0	2	3
5	2	2	2	1	3
0	2	6*	7*(A)	4	3
0	0	5	3	4	1
1	1	13*	8*(B)	2	3
13	10	28	23	17	15

* Signifies large numbers of Disabled Readers

Examination of Table VI shows that a total of 58 boys and 48 girls were identified as disabled readers. In relation to treatment groups, the numbers of pupils were distributed as follows: Basal Reader - 23; Linguistic Reader - 51; Modified Linguistic Reader - 32; total - 106.

A large number of disabled readers were found in the linguistic group as indicated by asterisks in Table VI: School (A) had one classroom of the experimental population; school (B) had two classes. Several factors seem related to this large number of reading failures. First of all, since school (B) had the largest population, one could expect a larger number of failures. Secondly, a large number of pupils registered in both schools came from homes of low socio-economic status. Thirdly, the results of both the first and second grade study showed significant differences within treatment groups, strongly indicating a difference in the teacher variable.

Of the 324 pupils tested at the beginning of grade three, 100 children had received Basal Reader instruction, 121 had learned by the Linguistic approach and 103 had been instructed by the Modified Linguistic method. Table VII shows the percentage of pupils from each of the three treatment groups who were classified as disabled readers.

TABLE VII

PERCENTAGE OF DISABLED READERS FROM
THE THREE TREATMENT GROUPS

Approach	Percentage		
	Boys	Girls	Total
Basal Reader	13	10	23
Linguistic	23.1	19	42.1
Modified Linguistic	16.5	14.6	31.1

Again, it may be noted from Table VII, that a high percentage of disabled readers were in the Linguistic group.

Characteristics of Disabled Readers

To determine the specific characteristics of the disabled readers, two procedures were followed. First, the pre-reading variables of this group were compared to the variables of the total population. Secondly, a battery of diagnostic tests was administered randomly to 53 of 106 disabled readers. The strengths and weaknesses of skills tests were analyzed and the data tabulated. In addition to the above measures, a survey of the classrooms in which these children were located was made to determine what provisions were made for them in the daily programs.

Comparison of Pre-Reading Variables

It was anticipated that the performance of the disabled reader group would be markedly different from the total population when compared on selected pre-reading measures. It is commonly agreed by reading authorities that once a child fails in the early stages of reading instruction his chances of success later on is slight unless a program of intervention is planned. In order to reach conclusions about the progress of disabled readers in this study, comparisons were made on the following pre-reading measures: chronological age, mental age, visual discrimination, knowledge of the alphabet, listening, word meaning and total readiness. Standardized measures used to determine the criterion variables included the following:

1. Mental Age. Pintner-Cunningham Primary Test, Form A
2. Visual Discrimination. Metropolitan Readiness Test - Matching Subtest
3. Knowledge of Alphabet. Metropolitan Readiness Test - Alphabet Subtest
   Murphy-Durrell Diagnostic Reading Readiness Test - Total Letter Name Subtest

4. Listening. Metropolitan Readiness Test - Listening Subtest

5. Word Meaning. Metropolitan Readiness Test - Word Meaning Subtest

6. Total Readiness. Metropolitan Readiness Test - Total Score

The data was analyzed in two ways. First of all the disabled readers were compared with the total population on each of the above variables. Secondly, boys and girls were compared in a similar fashion. A two sample "t" test for groups of unequal size was used to test for statistical significance of any differences between the variables. Tables VIII to XV indicate the results of these comparisons.

Table VIII compares the chronological ages of the disabled readers and the total population of pupils in the first grade study at the time of entry to grade one.

TABLE VIII

CHRONOLOGICAL AGE OF TOTAL GRADE THREE POPULATION AND
TOTAL GRADE THREE DISABLED READERS:
SEPTEMBER, 1964

	N	df	Chronological Age Range (months)	Mean	Variance	S.D.	t
Total Population	326		69 - 91	75.85	16.05	4.01	.463 (NS)
Disabled Readers	106		69 - 91	76.07	20.40	4.5	
Disabled Readers (Boys)	60		69 - 91	76.32	25.65	5.06	.619 (NS)
Disabled Readers (Girls)	46		70 - 86	75.76	13.88	3.7	

Table VIII reveals that the differences in chronological age between disabled readers and the total population are non-significant.

Analysis of Pre-Experiment Status of Pupils

Table IX includes information concerning the mental ability of the population under study as measured on the Pintner-Cunningham Primary Test. All of the children were given this test at the beginning of grade one. The data in Table IX compares the mental age as measured on the Pintner-Cunningham Primary Test of total population with those children identified as disabled readers at the grade three level.

TABLE IX

RANGE, RAW SCORE MEANS, VARIANCE AND t VALUES FOR THE MENTAL AGE OF THE TOTAL GRADE THREE POPULATION AND THE TOTAL GRADE THREE DISABLED READERS ON THE PINTNER-CUNNINGHAM PRIMARY TEST: SEPTEMBER, 1964

	N	df	Mental Age Range (months)	Mean	Variance	S.D.	t
Total Population	324		54 - 127	80.08	204.10	14.3	4.25*
Disabled Readers	106		54 - 99	73.75	114.21	10.6	
Disabled Readers (Boys)	60		55 - 95	72.6	77.44	8.8	.458 (N.S.)
Disabled Readers (Girls)	46		54 - 99	73.48	115.60	10.7	

* Significant at .01 level.

It can be noted in Table IX that the disabled readers were somewhat inferior to the total population in ability at the beginning of grade one. The difference in ability was significant at the .01 level.

Comparisons between the total grade three population and the disabled readers in the group have been made on several subtests of the Metropolitan Readiness Test including knowledge of the alphabet, listening ability, word meaning, and the total score. Table X indicates the differences between the groups on matching.

TABLE X

RANGE, RAW SCORES, VARIANCE AND t VALUES FOR THE TOTAL GRADE THREE POPULATION AND THE TOTAL DISABLED READERS ON THE METROPOLITAN SUBTEST MATCHING: SEPTEMBER, 1964

	N	df	Range of Raw Scores	Means	Variance	S.D.	t
Total Population	324		0 - 15	8.88	10.81	3.3	2.42 *
Disabled Readers	106		0 - 14	8.01	10.39	3.2	
Disabled Readers (Boys)	60		0 - 14	6.93	10.56	3.2	.139(N.S.)
Disabled Readers (Girls)	46		0 - 13	7.02	10.02	3.1	

* Significant at .05 level of confidence.

Table X reveals that the raw score means on the subtest, Matching, of the Metropolitan are significantly superior in favor of the total population.

The comparative achievement of the total group and the disabled readers in alphabet knowledge measured on the Metropolitan Readiness Test is presented in Table XI.

TABLE XI

RANGE, RAW SCORES, VARIANCE AND t VALUES FOR THE TOTAL GRADE THREE POPULATION AND THE TOTAL DISABLED READERS ON THE METROPOLITAN SUBTEST ALPHABET: SEPTEMBER, 1964

	N	df	Range of Raw Scores	Means	Variance	S.D.	t
Total Population	324		1 - 16	10.21	16.69	4.08	5.27*
Disabled Readers	106		1 - 15	7.86	12.90	3.6	
Disabled Readers (Boys)	60		1 - 15	7.60	12.04	3.4	.841(N.S.)
Disabled Readers (Girls)	46		3 - 15	8.20	13.81	3.7	

* Significant at .01 level of confidence.

It can be noted from Table XI that there is a significant difference at the .01 level in the achievement of the total population over that of the disabled readers in alphabet knowledge.

A second measure of alphabet knowledge is reported in Table XII. The range and raw score means of the two groups under study are reported for the subtest, Knowledge of Letter Names, of the Murphy-Durrell Diagnostic Reading Readiness Test.

TABLE XII

RANGE, RAW SCORE MEANS, VARIANCE AND t VALUES OF THE TOTAL GRADE THREE POPULATION AND TOTAL GRADE THREE DISABLED READERS ON SUBTEST, KNOWLEDGE OF LETTER NAMES, MURPHY-DURRELL, 1964

	N	df	Range of Raw Scores	Means	Variance	S.D.	t
Total Population	324		0 - 48	31.70	157.21	12.5	6.05*
Disabled Readers	106		0 - 46	23.25	147.93	12.1	
Disabled Readers (Boys)	60		3 - 46	22.02	150.92	12.3	1.302(N.S.)
Disabled Readers (Girls,	46		0 - 46	25.15	144.78	12.03	

* Significant at .01 level of confidence.

It can be seen from Table XII that the disabled readers were significantly inferior to the total group in this second measure related to alphabet knowledge.

Tables XIII, XIV, and XV present comparative scores for the subtests Word Meaning, Listening, and Total Readiness of the Metropolitan Readiness Tests.

TABLE XIII

RANGE, RAW SCORE MEANS, VARIANCE AND t VALUES OF THE TOTAL GRADE THREE POPULATION AND THE TOTAL GRADE THREE DISABLED READERS ON THE METROPOLITAN SUBTEST OF WORD MEANING: SEPTEMBER, 1964

	N	df	Range of Raw Scores	Means	Variance	S.D.	t
Total Population	324		2 - 16	10.24	7.58	2.75	4.42*
Disabled Readers	106		2 - 15	8.90	6.79	2.6	
Disabled Readers (Boys)	60		3 - 15	8.97	6.37	2.5	.315(N.S.)
Disabled Readers (Girls)	46		2 - 14	8.80	7.33	2.7	

* Significant at .01 level of confidence.

TABLE XIV

RANGE, RAW SCORE MEANS, VARIANCE AND t VALUES OF THE TOTAL GRADE THREE POPULATION AND TOTAL GRADE THREE DISABLED READERS ON THE METROPOLITAN SUBTEST, LISTENING: SEPTEMBER, 1964

	N	df	Range of Raw Scores	Means	Variance	S.D.	t
Total Population	324		3 - 16	10.01	5.42	2.37	4.830*
Disabled Readers	106		3 - 13	8.81	3.86	1.96	
Disabled Readers (Boys)	60		3 - 13	8.62	4.00	2.0	.833(N.S.)
Disabled Readers (Girls)	46		5 - 12	8.93	3.37	1.83	

* Significant at .01 level of confidence.

TABLE XV

RANGE, RAW SCORE MEANS, VARIANCE AND t VALUES OF THE TOTAL GRADE THREE POPULATION AND TOTAL GRADE THREE DISABLED READERS ON THE METROPOLITAN SUBTEST, TOTAL READINESS: SEPTEMBER, 1964

	N	df	Range of Raw Scores	Means	Variance	S.D.	t
Total Population	324		26 - 91	60.21	198.56	14.08	6.815*
Disabled Readers	106		26 - 75	50.01	114.95	10.72	
Disabled Readers (Boys)	60		29 - 71	49.22	101.47	10.07	.864(N.S.)
Disabled Readers (Girls)	46		26 - 75	51.03	130.65	11.43	

* Significant at .01 level of confidence.

The data tabulated in Tables XIII, XIV and XV indicate that the difference in raw score means on both the Listening and Word Meaning subtests of the Metropolitan Readiness Tests were significantly greater in favor of the total group at the .01 level of confidence. The same superiority is indicated by the means in Total Readiness for the total population.

Summary

An examination of the data presented in Tables IX through XV reveals that the disabled readers compared unfavorably with the total grade three population in mental age scores as measured on the Pintner-Cunningham Primary Test and on all measures of readiness. No significant differences on any of the criterion variables were evident between boys and girls in the group of disabled readers.

Clearly, those children who compared unfavorably with the total population on reading readiness variables continued to reveal reading difficulties at the third grade level. A cautionary word is necessary in viewing reading disability of the disabled readers in this study as an inevitable consequence of initial difficulty. It is important to know that teachers were required to carry out a prescribed treatment for all children in their classrooms regardless of the fact that some pupils were obviously in difficulty. Materials also were authorized. To have altered the approach or to have changed materials entirely would have jeopardized the research project. However, teachers did have the freedom to differentiate instruction through judicious use of prescribed materials and by grouping pupils for instruction.

In February 1967 further screening of the disabled reader group was carried out. Additional screening included an interview with teachers. Teachers were asked to judge subjectively pupil ability and reading achievement. After the interviews, it was decided to drop from further study pupils who scored 86 or less on the Pintner-Cunningham. Eight pupils were in this category. Also dropped were 14 pupils whose scores on the Stanford Achievement Test were lower than teachers would expect on the basis of reading performance in class. The elimination of the above two categories of pupils left 84 children for further study.

Teachers were not informed that 22 pupils would be dropped from further observation to avoid the possibility that treatment of disabled readers would be altered as a result of this information.

In summary, this group of 84 disabled readers were low in reading achievement as measured on the Stanford Achievement Test, their intelligence test scores were average or better and their teachers felt that these measures were reliable based on their knowledge of the children. The distribution of this group by sex, school, and by treatment received in grades one and two is tabulated in Table XVI.

TABLE XVI

SUBGROUP OF 84 DISABLED READERS IN GRADE THREE IDENTIFIED
BY SEX, TREATMENT AND DISTRIBUTION THROUGHOUT 18 SCHOOLS
FEBRUARY, 1967

Approach					
Basal		Linguistic		Modified Linguistic	
Boys	Girls	Boys	Girls	Boys	Girls
4	3	2	0	3	1
1	2	0	0	1	2
3	2	2	1	1	3
0	2	5	5	4	1
0	0	5	3	3	1
1	1	12	7	1	2
9	10	26	16	13	10

Inspection of Table XVI reveals the numbers of disabled readers from the total population and their identification by treatment groups.

TABLE XVII

SUBGROUP OF DISABLED READERS REPRESENTED BY PERCENTAGE FROM EACH TREATMENT GROUP

	N	Percentage of Treatment Group		
		Boys	Girls	Total
Basal Reader	100	9	10	19
Linguistic	121	21.5	13.2	34.7
Modified Linguistic	103	12.6	9.7	22.3

Disabled Readers N = 84, Boys = 48, Girls = 36

Testing Procedures

During the first two weeks of March, 1967, a team of examiners from the Reading and Language Arts Center of Syracuse University completed administration of a battery of individual diagnostic tests to selected disabled readers. Because of the limitation of time and the scattered nature of the target population, it was impossible to test all of the 84 disabled readers. Consequently, it was decided to select three schools with the largest number of disabled readers from each treatment group and to confine testing to these pupils. Table XVIII shows the distribution of the pupils who were given individual diagnostic tests.

TABLE XVIII

DISTRIBUTION OF PUPILS GIVEN DIAGNOSTIC TESTS BY TREATMENT GROUP

Approach	Boys	Girls	Total
Basal Reader	10	4	14
Linguistic	15	15	30
Modified Linguistic	5	4	9
Total	30	23	53

Fifty-three pupils were given a battery of seven tests which measured oral reading, word recognition, auditory discrimination, visual discrimination, letter naming and screening of auditory and visual acuity. The tests administered were as follows:

1.	Oral Reading	Gilmore Oral Reading Test, Form A
2.	Word Recognition	Spache Diagnostic Reading Scales: Word Recognition, Lists 1 and 2
3.	Auditory Discrimination	Wepman Auditory Discrimination Test, Form II
4.	Auditory Screening	Maico Sweepcheck
5.	Visual Discrimination	Betts Ready-to-Read Battery
6.	Visual Screening	Keystone Visual Survey Test
7.	Letter Naming	Informal Test, Syracuse University Reading Clinic

Analysis and Interpretation of Test Results

1. Oral Reading

The Gilmore Oral Reading Test consists of a series of paragraphs graded in difficulty. The test yields scores of accuracy, comprehension and rate scores: only accuracy and comprehension scores were determined for this group of disabled readers. The rate of reading score did not seem to be an appropriate measure for these pupils. Other fluency factors were felt to be more meaningful for our purpose and these factors are described fully below.

The results of the Gilmore Oral Reading Test are generally reported in grade equivalents for both accuracy and comprehension. When the grade equivalents were tabulated, it was found that many of the disabled readers appeared to be extremely competent readers. The Gilmore Oral Reading Test results seemed to be at extreme variance with both Stanford Achievement Test scores and teacher judgment.

Table XIX summarizes raw score means rather than grade equivalents for accuracy and comprehension on the Gilmore Oral Reading Test.

TABLE XIX

RAW SCORE MEANS OF GILMORE ORAL
READING TEST: ACCURACY

Approach	Sex		Total
	Boys	Girls	
Basal Reader	25.64	29.17	26.98
Linguistic Reader	23.68	27.50	25.30
Modified Linguistic	27.0	29.29	28.00

Comparison of the treatment groups on total mean scores indicates that the Modified Linguistic group was superior to the other two groups. The difference between the Modified Linguistic group and the Basal Reader group is slight. The greatest mean difference occurs between boys and girls. This is true in each group.

Girls were superior in oral reading to the boys. When analysis of kinds of oral reading errors was made, it was found that a larger percentage of boys made errors of every type. Table XX indicates the percentage of errors made by boys and girls. Table XXI presents the mean number of errors of each type which were made on the basis of sex difference.

TABLE XX

PERCENTAGE OF BOYS AND GIRLS COMMITTING TYPES OF ERRORS: GILMORE ORAL READING TEST

Total N=53 Boys =30 Girls =23	Repetitions	Total Substitutions	Meaningful Substitutions	Meaningless Substitutions	Additions	Omissions	Examiner Assistance
Boys	84.3%	93.8%	90.6%	96.8%	50.0%	59.4%	81.3%
Girls	70.8	87.5	83.3	91.7	66.7	58.3	50.0
Boys & Girls	78.6	91.1	87.5	94.6	57.1	58.9	67.9

TABLE XXI

MEAN NUMBER OF ORAL READING ERRORS: GILMORE ORAL READING TEST, MARCH, 1967

Total N=53 Boys =30 Girls =23	Repetitions	Total Substitutions	Meaningful Substitutions	Meaningless Substitutions	Additions	Omissions	Examiner Assistance
Boys	5.6	3.5	3.1	4.5	2.0	2.4	3.6
Girls	4.9	2.8	2.7	3.1	1.8	1.6	1.0
Boys & Girls	5.4	3.4	2.9	3.9	1.9	2.0	2.8

The greatest differences occurred in the kinds of word substitutions made and in the amount of dependence on examiner assistance in determining unfamiliar words. Boys evidenced more difficulty in word attack skills than girls and relied more on examiner assistance.

The greater difficulty experienced by boys in oral reading was also manifested in their fluency. Seventy-five percent of the boys were word-by-word readers compared with approximately 17 percent of the girls. This is not indicative that girls were fluent readers. On the contrary, few of them read with good phrasing. Five of the boys followed the line of print with their fingers but none of the girls did so.

Table XXII presents the mean scores made on comprehension of the Gilmore Oral Reading Test.

TABLE XXII

MEAN SCORES ON GILMORE ORAL READING TEST:
COMPREHENSION, MARCH, 1967

Approach	Sex		Total
	Boys	Girls	
Basal Reader	20.02	24.33	21.55
Linguistic Reader	17.21	19.64	18.18
Modified Linguistic	19.60	25.25	22.11

Inspection of the above table reveals relatively slight mean differences between treatment group totals in comprehension. Girls were superior to boys in each group. This seems reasonable since the boys had greater difficulty merely reading words and also in putting known words together in thought units.

Word Recognition

Word recognition was measured by using Word Lists I and II of the Spache Diagnostic Reading Scale. The results of this test were used to determine sight word ability and to analyze word attack skill. Table XXIII shows the mean number of words read from the two lists without error.

TABLE XXIII

MEAN RAW SCORES IN WORD RECOGNITION, SPACHE DIAGNOSTIC READING SCALE: MARCH, 1967

Approach	Boys	Girls	Total Boys and Girls
Basal Reader	71.90	73.17	72.38
Linguistic Reader	58.89	71.79	64.67
Modified Linguistic	73.6	80.25	76.56

N = 53, Boys = 30, Girls = 23

Accuracy of word recognition in context was presented in Table XXII. Table XXIII shows the superiority of the Modified Linguistic group over the other two treatment groups. Also girls in each treatment group show superiority over the boys.

The pattern of errors made by boys and girls was similar in nature. Least difficulty occurred with initial consonant sounds. Final consonant sounds were most difficult with medial consonants sounds presenting the second order of difficulty. Errors in vowel digraphs and short vowel sounds occurred with about equal frequency. Analysis of vowel sounds presented more difficulty than consonant sounds. Interestingly enough, there were fewer difficulties in identifying consonant blend and consonant digraph than in single consonant sounds. The proportion of these errors was approximately the same.

Auditory Discrimination

The Wepman Auditory Discrimination Test, Form II was administered to all pupils in the sub-sample group of 53 disabled readers. Table

XXIV indicates the number of boys and girls who passed and failed according to the Wepman Auditory Discrimination Test norms. The test norms were based on chronological age. Children in the disabled reader group were judged to have inadequate ability to discriminate between sounds if they made more than three errors on the test.

TABLE XXIV

SUCCESS OF DISABLED READERS ON THE WEPMAN
AUDITORY DISCRIMINATION TEST

Total N=53 Boys =30 Girls =23	Approach						Total
	Basal Reader		Linguistic		Mod. Linguistic		
	Pass	Fail	Pass	Fail	Pass	Fail	
Boys	4	5	11	6	3	1	30
Girls	3	2	12	1	2	3	23
Total: Boys and Girls	5	7	23	7	5	4	53

Table XXV presents the precentage of disabled readers who failed the Wepman Auditory Discrimination Test.

TABLE XXV

PERCENTAGE OF FAILURES AMONG DISABLED READERS ON
THE WEPMAN AUDITORY DISCRIMINATION TEST

Total N = 53 Boys = 30 Girls = 23	Approach		
	Basal Reader	Linguistic Reader	Modified Linguistic
Boys	55.5%	35.3%	25.0%
Girls	40.0%	7.7%	60.0%
Total: Boys & Girls	50.0%	23.3%	44.4%

There were 18 boys and girls from all treatment groups who had inadequate ability to discriminate between sounds according to the Wepman Auditory Discrimination Test. This total represented approximately 35 percent of all disabled readers tested.

Visual Discrimination Test

Four subtests made up the visual discrimination test from the Betts Ready-to-Read Battery. The tests included discrimination between upper and lower case letters, and in noting difference in word forms, consonant blends and digraphs. Very few errors were made in visual discrimination by the girls. Most boys were also able to discriminate without difficulty. The subtest that resulted in most errors for boys was that which required the pupils to see differences in word forms. Analysis of errors on this subtest indicated that most were reversals of letters within a word.

Knowledge of Alphabet

A test was given to each child to measure knowledge of letter names. The test consisted of all upper and lower case letters presented in two separate groups. The letters in each group were not in alphabetical order.

Results of the test showed that boys had more difficulty than girls and that more boys from the Linguistic group made errors than boys from the other two groups. Fifty percent of the boys made at least one error in identifying lower case letters. The most common error was in confusing "p" for "q".

Auditory Acuity

A Maico Audiometric Sweepcheck test was completed for all 53 children. Three children, one boy and two girls were found to have hearing losses in the critical speech frequency range. The school administrators and the classroom teachers were notified of the results and referrals were made to the parents of the children recommending a hearing examination by an ear specialist. No feedback was made to learn the results of these referrals.

Visual Acuity

The Keystone Visual Survey test was administered to all 53 children in the disabled reader group. Five boys and three girls, approximately 15 percent of the total group, were referred for a visual examination by a specialist. The specialist suggested that five children may have had fusion difficulty at near point, five difficulty with usable vision in both eyes at near point and two had a loss of usable vision at far point on the test.

Corrective lens prescriptions were made for three of these children.

Summary of Diagnostic Tests

A battery of diagnostic tests were administered to 53 disabled readers in the third grade. In addition, all children were screened for possible visual anomalies and hearing loss.

The results of each test were analyzed and the data were arranged to compare performance between the three treatment groups to which children were assigned in grades one and two. The performance of

boys and girls were also compared.

The major findings are summarized below.

1. Oral Reading -- Two parts of the Gilmore Oral Reading Test, Accuracy and Comprehension, were analyzed. Differences were observed between treatment groups on the two parts of the test. Children who had used the Modified Linguistics approach were superior to the Basal Reader and Linguistic Reader groups in accuracy and comprehension. The greatest difficulty was observed in children who had had instruction in the Linguistic Readers.

Girls were superior to boys in accuracy and comprehension. Boys made more word recognition errors and were less able than girls to use context in identifying unfamiliar words. Boys were less fluent than girls in oral reading, and 75 percent of the boys read word by word. Word identification difficulties were the major deterrent to efficient reading for all children.

2. Word Recognition - Word recognition performance was measured using Word Lists I and II from the Spache Diagnostic Reading Scales. Children in the Modified Linguistic Materials were superior to children in the other two treatment groups. They had larger sight vocabularies and made fewer word recognition errors of all types.

Girls were superior to boys in their ability to recognize words and they made fewer word recognition errors. However, the patterns of errors were similar for both sexes. Greatest difficulty in word analysis was with consonants at the end of words, and with vowels. Vowel errors with greatest frequency included short vowel sounds and digraphs.

For many boys the only consistent method of attacking unfamiliar words was with the initial consonant sounds.

3. Auditory Discrimination. Thirty-four percent of the disabled readers failed the Wepman Auditory Discrimination Test. Boys who failed outnumbered girls who failed two to one.

4. Visual Discrimination. Most disabled readers had little difficulty with the visual discrimination test. A few boys showed a tendency to reverse letter forms.

5. Knowledge of Letter Names. Girls had little difficulty naming upper and lower case letters. Fifty percent of the boys made one error or more in naming lower case letters. More errors were made by boys from the Linguistic Reader group than boys from the other two treatment groups.

6. Auditory Acuity. One boy and two girls were referred to a hearing specialist as a result of the Maico Auditory Sweepcheck Test.

7. Visual Acuity. Five boys and three girls were referred for a vision examination as a result of the screening test. Corrective lens prescriptions were made for three of these children by their doctors.

School Program for Disabled Readers

Teachers in all schools were anxious and concerned to help children who were having reading difficulties. They were most concerned about the disabled reader who seemed to be capable of learning but who was not making progress. It is an understatement to say that the provision of proper instruction is never easy and is often frustrating.

Approximately 32.7 percent of all children in this study were reading one-half a year below grade placement or more at the beginning of the third grade. This percentage included children at all levels of intelligence. When children of low intelligence were eliminated from the group, approximately 25.9 percent of the population were defined as disabled readers.

All but a few of these children had learning problems which required the assistance of a specialist. However, the correction of most reading difficulties was the responsibility of the classroom teacher. Fortunately, teachers were aware of the severe difficulties that the disabled readers had by personal observation and they were also informed regularly of the group and individual test findings made by the examiners during the school year. The findings were discussed with the teachers but suggestions for remediation were not given. This limitation was due to the lack of research staff to provide such service.

The concern of this section of the report is how administrators and teachers provided for the needs of all children in the study, especially for the disabled readers. A description of the adjustments made by each school follows.

Program Changes

In the original study design seven classrooms of children were assigned to the Ginn Basal Reading Program, seven to the Bloomfield-Barnhart Linguistic Readers, and seven to the Singer Modified Linguistics Materials. At the beginning of the third grade most schools in the latter two programs changed to basal reader programs. This was done according to the administration procedure of the school. Two classes that had used the Modified Linguistic materials, however, continued to use them in the third grade until the program was completed, at which time children were placed in a Basal Reader program. One class started the school year with Linguistic Readers but changed to a Basal Reader program two months later. Tables XXV - XXVII indicate the program changes made within individual schools at the beginning of third grade.

TABLE XXV

PROGRAM CHANGES MADE BY THE SEVEN CLASSROOMS USING LINGUISTIC READERS

Classroom	Program Changes September, 1966
1	Co-Basal
2	Basal
3	Basal
4	Started with Linguistic Reader - Co-Basal
5	Co-Basal
6	Co-Basal
7	Co-Basal

TABLE XXVI

PROGRAM CHANGES MADE BY THE SEVEN CLASSROOMS USING THE BASAL READER

Classroom	Program Changes September, 1966
1	No change
2	No change
3	Co-Basal
4 *	Combined Approaches
5	No change
6	No change
7	No change

* Language-Experience, Basal Reader, Individualized

TABLE XXVII

PROGRAM CHANGES MADE BY THE SEVEN CLASSROOMS USING MODIFIED LINGUISTIC MATERIALS

Classroom	Program Changes September, 1966
1 *	Modified Linguistic Materials - Basal
2	Basal Reader
3	Co-Basal
4	Basal
5	Basal
6 +	No change
7	Co-Basal

* One group continued with Modified Linguistic Materials. One group placed on Basal Readers.

+ As children completed Modified Linguistic Materials they were placed into Basal Reader program.

Time Allotments

In the first two years of the study daily time used for reading instruction was controlled so that effects of the three experimental methods could be studied. Once the programs changed this variable altered considerably. An attempt was made to learn how much daily time was used in each classroom for reading instruction. Teachers were interviewed and classrooms were visited. A great variance was noted in the amount of time for reading instruction. Teachers were not consistent in the amount of time they devoted to reading instruction from day to day. Some children received more instruction than others as attempts were made to meet individual differences. In one school thirteen children received a basic reading lesson each day in their classrooms and later had special skills lessons from a teacher aide. It was possible to conclude that an hour of reading instruction each day was the minimum time allotment and ranged to a maximum of three hours for some pupils.

Materials

Interviews and observations were made also to determine what materials were used to supplement the adopted reading approach. This was found to be an individual teacher-school matter that depended on teacher competencies and their understandings of the reading process. One teacher expressed the view that the basal reader program she used was a complete program and did not require additional materials. In another classroom the teacher felt each child needed the daily basic reading lesson, as outlined in a basal program but, in addition, required special skills lessons, frequent individual conferences with her, and a multitude of other independent reading experiences.

The materials used by teachers in the different schools are indicated in Table XXVIII below.

TABLE XXVIII

MATERIALS USED TO SUPPLEMENT READING INSTRUCTION IN THE THIRD GRADE

School	Basic Approach	Supplementary Materials
1	Co-Basal	Literature Readers, Fun and Fancy and Tall Tales
2	Basal	None
3	Modified Linguistic Materials	Literature Reader, Treat Shop, Continental Press skill worksheets
4	Co-Basal	None
5	Basal	Skills lessons with overhead projector, teacher-made worksheets, tape recorder
6	Basal	Classroom dramas, literature readers: Stories from Everywhere, Once Upon a Storytime, Doorway to Adventure, Story Caravan, Treat Shop, Ranches and Rainbows. Overhead projector transparencies for skills, tape recorder, Dolch games
7	Co-Basal	Weekly Readers, free reading
8	Basal	SRA Lab I, Charles E. Merrill Skilltexts
9	Linguistic Reader Co-Basal	Listening-Viewing Center with records, tapes, and filmstrips, independent reading books, Lucky Book Club, Phonic Skill Texts, Readers Digest Skill Building, Speech-to-Print Phonics
10	Co-Basal	Several additional basal reader series, Dolch games, free reading books: Lucky Book Club

TABLE XXVIII (Continued)

MATERIALS USED TO SUPPLEMENT READING
INSTRUCTION IN THE THIRD GRADE

School	Basic Approach	Supplementary Materials
11	Combined Approach	Readers Digest Skill Builders; SRA Lab, Elementary Edition; Listening-Viewing Center including tapes, recorder, filmstrips; Diagnostic check sheet kept for each child.
12	Basal Co-Basal (Top group only)	Jim Forest Readers; Literature Readers, Wide Horizon
13	No population	
14	Modified Linguistic Materials Co-Basal	Listening-Viewing Center with tapes, records, and filmstrips; SRA Lab, Elementary Edition
15	Co-Basal	Listening-Viewing Center with tapes, records, filmstrips; Continental Press skill worksheets; Dolch games; Milton-Bradley phonic books
16	Basal	Listening-Viewing Center with tapes, records, filmstrips; classroom library organized according to readability levels; Macmillan Reading Spectrum for advanced pupils

Teachers attempted to meet individual differences in reading instruction through a variety of grouping plans in the classroom. The three group plan was the most common, however. One classroom teacher used no set grouping plan. She organized and reorganized groups frequently for skills instruction. Another class used a combination of reading approaches including language-experience, basal reader, and individualized reading. Each child in this class met with the teacher occasionally for an individual conference. Table XXX gives the number of classroom groups used by teachers in the study.

TABLE XXX

NUMBER OF INSTRUCTIONAL READING GROUPS
USED BY TEACHERS ON THIRD YEAR STUDY

Grouping Plan	Number of Classrooms
Two Group Plan	5
Three Group Plan	19
Four Group Plan	2

Two of the experimental materials, the Bloomfield-Barnhart Linguistic Readers and the Singer Modified Linguistic Materials, could be completed by an average class in two years. In this study some children had not completed the programs at the end of grade two. However, it was pointed out above that most schools in the study that were assigned to these two experimental methods discontinued use of them at the end of the second year and consequently did not complete them. In each instance the schools concerned decided on their own how to phase children into their chosen program. Most did so by administering the end of grade two test that is provided by the basal reader series in use. These test results helped initially to determine the child's functional reading level and his book placement in the basal reading series. Book placement levels in May of the third grade year are noted in Table XXXI for all children in the study as reported by their teachers.

TABLE XXXI

LEVELS AT WHICH CHILDREN WERE INSTRUCTED IN BASAL READING IN MAY OF THE THIRD GRADE YEAR

Instructional Level	Number of Children
Primer	2
First Reader	10
Second Reader (1)	19
Second Reader (2)	19
Modified Linguistic Material *	19
Third Reader (1)	55
Third Reader (2)	147
Fourth Reader	53

* 19 pupils received instruction in the third year book of the Singer Program

Special Services Available

Additional reading services were available to teachers in thirteen schools. Teachers in seven schools had the regular services of a trained reading consultant. The consultant's services were available to teachers by appointment. Six schools had special reading teachers who taught disabled readers. Two of these six teachers worked full time in one school, the other four taught half days in one school and then moved to another school.

Some children were referred for special reading instruction and some for other services. The pupils who received special help outside the classroom are indicated in Table XXXII.

TABLE XXXII

NUMBERS OF CHILDREN RECEIVING SPECIAL SERVICES OUTSIDE THEIR CLASSROOMS

Service	Number
Special Reading Classes	13
Speech Therapy	12
School Counseling	6
Social Work (Family)	2

A survey of the reading programs in all of the schools participating in this research project revealed diversity in approach, multiplicity of materials and limited specialized services. Most schools supplemented a basal or a co-basal approach with skill development materials, literary books and centers for listening, speaking and viewing activities. The traditional three-group plan for reading was most evident, but facilities for dealing with disabled readers were varied.

In almost one-third of the schools, the services of a reading teacher were available; in another third, a consultant's advice could be obtained; in the remaining schools, class teachers were responsible for aiding disabled readers.

The information in Tables XXV to XXXII attests to the autonomy that appears to exist in the schools of the three districts. Schools plan their own programs, central authorities provide additional reading services and most class teachers provide for the diversity of achievement among their pupils.

Summary, Conclusions and Implications

This addendum is a report of the research project which was concerned with the reading ability of 376 third grade children who participated in a more extensive study during their first and second years in school. In general, the focus at the grade three level was toward the reading achievement of the total group in relation to the different methods of reading instruction which they had received in the three original treatment groups. In particular, this study sought to identify disabled readers among the grade three population, to determine their characteristics and to ascertain whether or not they were identifiable in the early stages of reading instruction. In addition, observations were made to determine the nature of reading instruction and ancillary services provided for disabled readers in a number of the schools.

The total population had been assigned to basal reader instruction, a linguistic approach, or a modified linguistic technique for two years. In grade three, for the most part, all pupils were placed in a basal reader program. While statistical inferences could not be made about the relative achievement of the three treatment groups during the third year because of lack of sufficient controls, the mean gains in reading achievement were somewhat less than would be anticipated over an eight-month period. However, the fact that approximately one third of the population was identified as disabled readers at the beginning of grade three must be considered in appraising the gains made.

From the total population, 106 children were identified as disabled readers. These children could have been identified as potential reading failures at the beginning of grade one on the basis of objective measures. These pupils had low scores on reading readiness tasks; a few pupils also had low I.Q. scores on the Pintner-Cunningham Test. When comparisons were made between boys and girls in the disabled reader group, no significant differences were found in the characteristics of chronological or mental age, nor on any of the reading readiness variables.

Careful screening or a subgroup of fifty-three children from the larger group of 106 disabled readers was made through individual testing by trained examiners. This made it possible to identify specific characteristics associated with poor reading ability. In oral reading, girls were superior to boys in accuracy and comprehension. Both boys and girls had difficulty in word attack skills, their pattern of errors was the same, but girls made fewer errors. Tasks requiring auditory and visual discrimination proved difficult for boys. Boys who failed the Wepman Auditory Discrimination Test outnumbered girls two to one. Letter identification also presented greater difficulties for boys.

A survey of classrooms and interviews with teachers indicated a concern for the disabled reader. However, the fact that many children continued to be unsuccessful in reading for three years raises some questions. During the first two years of the research project, some teachers probably felt restricted in dealing with disabled readers due to prescribed reading programs. On the other hand, success for disabled readers was not guaranteed when the schools assumed responsibility for the selection of their own programs and when a diversity of material for reading instruction was available. It appears that many teachers need guidance in using information gained from standardized tests to identify those pupils who require instruction to offset initial disadvantage and direction for adapting the authorized reading program for individual needs.

This study confirms the findings of the research of the first and second grade studies that not one of the three approaches to reading instruction, the basal reader method, linguistic instruction, or the modified linguistic technique is entirely successful in teaching all children to read. Secondly, it is apparent that survey tests are useful for identifying potential reading failures at the beginning of grade one. Again, confirming the findings of the two previous studies that the teacher variable is a most important factor in determining the efficacy of any program of reading instruction, in this study it appears that responsibility for effective instruction finally rests with the teacher. The responsibility becomes one of identifying potential disabled readers and of planning appropriate reading programs for these children.

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APPENDIX A

Special Tests and Forms Used

San Diego Pupil Attitude Inventory

Directions for Preparing the Writing Sample

Fry Phonetically Regular Word List

Gates Word Pronunciation Test

AN INVENTORY OF READING ATTITUDE

(Standardization Edition)

Name ______________________________ Grade_______ Boy Girl
Last First Middle

School ______________________ Teacher ______________________

Date of Test ______________________
Mo. Day Yr.

TO BOYS AND GIRLS:

This sheet has some questions about reading which can be answered YES or NO. Your answers will show what you usually think about reading. After each question is read to you, circle your answer.

INSTRUCTIONS TO PUPILS

Draw a circle around the word YES or NO, whichever shows your answer.

Sample A

Yes No Do you like to read?

If you like to read, you should have drawn a circle around the word YES in Sample A; if you do not like to read, you should have drawn a circle around the word NO.

Sample B

Yes No Do you read as well as you would like to?

If you read as well as you would like to, you should have drawn a circle around the word YES in Sample B; if not, you should have drawn a circle around the word NO.

Yes No 1. Do you like to read before you go to bed?

Yes No 2. Do you think that you are a poor reader?

Yes No 3. Are you interested in what other people read?

Yes No 4. Do you like to read when your mother and dad are reading?

Yes No 5. Is reading your favorite subject at school?

Yes No 6. If you could do anything you wanted to do, would reading be one of the things you would choose to do?

Yes No 7. Do you think that you are a good reader for your age?

Yes No 8. Do you like to read catalogues?

Yes No 9. Do you think that most things are more fun than reading?

Yes No 10. Do you like to read aloud for other children at school?

Yes No 11. Do you think reading recipes is fun?

Yes No 12. Do you like to tell stories?

Yes No 13. Do you like to read the newspaper?

Yes No 14. Do you like to read all kinds of books at school?

Yes No 15. Do you like to answer questions about things you have read?

Yes No 16. Do you think it is a waste of time to make rhymes with words?

Yes No 17. Do you like to talk about books you have read?

Yes No 18. Does reading make you feel good?

Yes No 19. Do you feel that reading time is the best part of the school day?

Yes No 20. Do you find it hard to write about what you have read?

Yes No 21. Would you like to have more books to read?

Yes No 22. Do you like to read hard books?

Yes No 23. Do you think that there are many beautiful words in poems?

Yes No 24. Do you like to act out stories that you have read in books?

Yes No 25. Do you like to take reading tests?

Supt. of Schools, Dept. of Educ. San Diego County

FRY PHONETICALLY REGULAR WORDS ORAL READING TEST

Child's Name ____________________ Date ____________________

School ____________________ Room ____________ Code Number ____

Examiner ____________________ Number of words read correctly ______

1. nap
2. pen
3. hid
4. job
5. rug
6. shade
7. drive
8. joke
9. mule
10. plain
11. hay
12. keen
13. least
14. loan
15. show
16. walk
17. haul
18. jaw
19. soil
20. joy
21. frown
22. trout
23. term
24. curl
25. birch
26. rare
27. star
28. porch
29. smooth
30. shook

Directions: Have pupil read words from one copy while examiner makes another copy. Do not give pupil a second chance but accept immediate self-correction. Let every student try the whole first column. If he gets two words correct from word number six on, let him try the whole second column.

GATES WORD PRONUNCIATION TEST

EXAMINER'S COPY

Directions: Have the child read the words out loud. Tell him you would like him to read some words for you. If he fails the first time, ask him to try the word again. Continue until ten consecutive words have been missed. As the words become difficult, special care should be taken to encourage the child. The score is one point for each word correctly pronounced on the first trial, one-half point for each word correctly pronounced on the second trial. (Note: 9½ correct would be scored as 10.)

---

1. so
2. we
3. as
4. go
5. the
6. not
7. how
8. may
9. king
10. here
11. grow
12. late
13. every
14. about
15. paper
16. blind
17. window
18. family
19. perhaps
20. plaster
21. passenger
22. wander
23. interest
24. chocolate
25. dispute
26. portion
27. conductor
28. brightness
29. intelligent
30. construct
31. position
32. profitable
33. irregular
34. schoolmaster
35. lamentation
36. community
37. satisfactory
38. illustrious
39. superstition
40. affectionate

Child's Name: ______________________ Test date _____ _____ _____

Examiner: ______________________ Birth date _____ _____ _____

Age: ______________

Second Grade Written Language Measures
USOE Cooperative Research Project

Directions to the Classroom Teacher

General Information

You are being asked to obtain one writing sample from each pupil in your classroom. We wish to emphasize the necessity of following the directions and procedures exactly.

As you realize, many other teachers throughout the nation will also be asked to obtain writing samples from their pupils. It is necessary, therefore, that these samples be obtained in all classrooms at approximately the same time and by following the same directions.

You are requested to obtain the writing sample on the morning of May 23, 1966 (within the ten days of testing, one year from previous year's testing).

Classroom Situation

No attempt should be made to enrich your normal room display through the use of word lists, pictures, dictionaries, etc. The classroom conditions should approximate those normally found in your daily writing activities.

Materials

The writing paper and pencils customarily used in your classroom should be used in obtaining this sample.

Identification

The pupil's name, teacher's name, and the school should be indicated on each pupil's paper.

Teacher Directions to the Pupils

(1) When all have finished writing name, etc., say....
"Now put your pencils down. I am going to read a story about a frog named Hoppy. I want you to listen closely for I am going to omit the ending. When I have finished reading, I want you to take your pencil and tell how you think the story should end."

"You will need to listen very carefully because I can't help you write this story. If you can't spell a word, just write it the way it sounds. Are there any questions?"

(If the question arises about asking for additional paper, tell the children that they may use as much paper as they feel is necessary. When two or three sheets are used, please see to it that they are properly coded and stapled.)

"Ready....Listen....Here is the story."

Hoppy was the most unusual frog that ever lived in Blue Swamp. Hoppy was different because of his color. All of the other frogs had brown skin, but not Hoppy. No, sir, he was a purple frog. He was different, too, because he never worried about anything. Life for Hoppy was just fun, fun, fun. But the thing that really made him different was that he turned somersaults instead of hopping and jumping as the other frogs did. This made the other frogs jealous, but Hoppy did not care. He was having fun.

One day Hoppy was hopping and somersaulting along, having fun like he always did, when he saw Racky, the raccoon, hiding up in a tree.

"Hey, Racky," Hoppy shouted, "what are you doing up in the tree? Why don't you come down and have some fun with me?"

"Oh, no," said Racky, "Willie Crocodile is looking for his supper and I'm staying right here until it's safe to come down."

"Suit yourself," said Hoppy as he hopped along.

Soon he saw Brownie, the mouse, digging a hole in the ground.

"Hey, Brownie," yelled Hoppy, "how come you are digging that hole? Why don't you stop a while and play with me."

"No sir," replied Brownie, "Willie Crocodile is looking for his supper, and I'm going to hide until it's safe to come out again."

"Well, suit yourself," said Hoppy as he hopped along.

By and by, Hoppy met Mr. Owl. He was perched on a limb just above Hoppy's head.

"Oh, no," said Mr. Owl, "it's not safe to be funnin' especially when Willie Crocodile is looking for his supper. You'd better find a place to hide."

"Well, maybe so," replied Hoppy, "but I don't have time to hide, not when I can have fun instead." And he hopped along.

By now Hoppy was feeling real happy. He was jumping higher and higher as he went along. He jumped and turned over and over. Wheeee! He was having fun.

In his excitement, Hoppy didn't notice that Blue Swamp had become very quiet. It wasn't until he stopped to catch his breath that he noticed how quiet things really were. Not even the leaves stirred. He didn't know what to make of it.

Suddenly the silence was broken by a squeeking sound. It was Brownie running along beside him. All he kept saying was, "Run for your life Hoppy! Run!" Then Brownie scurried as fast as he could back to his hole in the ground.

Racky, the raccoon, peeped out through the leaves of the tree he was hiding in. "Yes, yes, you'd better hurry Hoppy."

"Hoot, hoot!" cried Mr. Owl, "Go, Hoppy, go before it's too late."

(2) Upon completion of the reading say . . .

"That's as much of the story as I can tell you. Now you tell me what you think happened."

(3) Once the children begin to write, begin timing them. They have twenty (20) minutes writing time. Stop them at the end of twenty (20) minutes. Children who finish ahead of time may go on to something else. Their papers should be collected upon finishing. Please try to keep those who finish early from interrupting those who are still writing. At the end of twenty (20) minutes writing . . . say "Please stop writing."

It is particularly cautioned that no specific titles be presented, nor should picture or other stimuli be employed.

Other Procedures

No spelling help should be provided during the writing period. If pupils request spelling assistance, they should be told to try to spell the word and then encouraged to proceed.

If pupils normally use a simplified dictionary or write from display flash cards or use a speller, such practices may be allowed.

Under no circumstances, however, should you correct misspellings, give ideas, or assist the pupils beyond the point of general encouragement.

Time Limit

Following the heading of the paper, 20 minutes should be allowed for the pupils to finish their stories. Papers of pupils who finish early should be inconspicuously collected and a coloring exercise or a similar silent activity should be provided for the remainder of the twenty minutes.

Written Sample Identification

At the end of twenty minutes, all stories should be collected, packaged, and clearly labeled:

WRITING SAMPLE (Date May 23, 1966)

You are not to correct these stories: they will be corrected and scored by the Project Director's Staff who will apprise you of the correction procedures should you desire this information.

APPENDIX D.--ERIC REPORT RESUME

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
OFFICE OF EDUCATION

ERIC REPORT RESUME

ERIC ACCESSION NO.

IS DOCUMENT COPYRIGHTED? ☐ ☐

Comparison of Three Methods of Teaching Reading in the Second Grade

William D. Sheldon and others

Syracuse University, Syracuse, New York

Cooperative Research Project No. 3231, USOE, Washington

31 Jan-68 OE-6-10-076

182 p.

Methods Research, reading achievement, beginning reading, reading programs, Second Grade, Third Grade, disabled readers

Syracuse, N.Y. Basals, Linguistics, Modified Linguistics

Compares results in reading achievement for 376 second graders and investigates performance on other factors (oral reading, creative writing, etc.) for 150 randomly selected subjects taught by three different approaches: basal reader, modified linguistic, and linguistic. Examines the reading achievement of 376 third grade children relative to different methods of instruction received in grades one and two. Describes the characteristics of 106 disabled readers among the grade three population. Factors considered are age, I.Q., and reading readiness.